

THE CODING EDUCATION FOR GHANA INNITIATIVE

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About IIPGH

A PROFESSIONAL ASSOCIATION IN THE ICT INDUSTRY WITH THE FOLLOWING OBJECTIVES:

- Mobilise Professionals, Students & Businesses
- Train and Certify Students and Professionals
- Provide opportunities through networking
- Educate the Public
- Influence Policy Formulation
- Lead in Technology Advocacy

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The Coding Program

Online, Hubs and Schools

Coding or Computer Programming is what makes it possible for us to create computer software, apps and websites. Our browser, Operating System, the apps on our phones, Facebook and WhatsApp among others, were developed through coding.

BENEFITS OF CODING

1

Learning to code empowers you to do many things you would otherwise not be able to do. These things include hand-crafting your own websites, becoming a career coder or even starting a technology business. Most importantly, you will be able to understand the technology shaping your world.

SOME OTHER BENEFITS OF CODING ARE:

- Enables critical thinking especially for young people.
- Builds persistence and perseverance as one navigates through complex procedures.
- Helps learners acquire problem solving skills, since most activities are geared towards solutions.
- There is enhanced application of mathematical skill through practical activities.
- Prepares learners with 21st century skills for sustainable employment.





IIPGH Coding Program

- How it all started

On 3rd March 2018, the Institute and its partners embarked on a major initiative to get children, teenagers, graduates, and professionals to learn Coding. The initiative was designed to provide structured training for students starting with kids. In order to create awareness about the importance of coding, especially for young people, workshops, radio, and television talk shows were organized. Articles on the benefits of coding were also published in the newspapers.

The first newspaper article on Coding for Kids was written by Mr. Yayra De Souza and that set the tone for our coding revolution. The introductory part of his article which was published on 26th February 2018 reads: "On 4th December 2017, Google marked the celebration of 50 years of kids' coding with a doodle. This was during the Computer Science Education Week. This celebration was mainly centered on the history of coding in the United States of America. This brings to mind a question; for how long have parents in Ghana been introducing their kids to coding? Or better still, is there a conscious effort to introduce kids to coding in Ghana at all?" read more: https://iipgh.org/cod-

ing-for-kids-the-need-for-coding-culture-in-ghana/



The article caught the attention of IIPGH management, and Mr. De Souza was invited for further discussions on how to implement the concept of introducing kids to coding. The team quickly put together its first flyer inviting parents to bring their wards to start learning coding from the small office of IIPGH at East Legon.





PIONEERING STUDENTS

Six children between 7-9 years enrolled on the first day of the weekend coding program, on 3rd March 2018. The Coding program has since been extended to over 10,000 students comprising kids in primary school, teenagers in secondary school, tertiary students, graduates, and professionals. Three (3) of our pioneering students namely Selase Gowu, Elikem Gador and Ryan Kpodo are still on the coding program. They have moved through different stages from block-based coding such as scratch, app inventor, Code-it!, to more complex text-based ones. They have completed programming languages such as HTML, CSS, JavaScript, Wordpress, PHP, Python, Java, among others. They have acquired skills in developing websites, games, 3D Designs, animations and mobile apps. These pioneering students will be supported and guided as they learn these skills alongside their academic work.



ONLINE CODING LESSONS

Since the outbreak of the Coronavirus pandemic and the subsequent lockdown, the Institute of ICT Professionals Ghana in partnership with GoDi Africa, moved the coding program online. The lessons which are now being delivered via Zoom, have been embraced by both students and parents. For parents, it's convenient as they will not have to drive every weekend to the training centre for coding lessons. The students are also happy with the online lessons because all lessons are recorded and shared with them. This makes it possible for students to playback the entire lesson for revision or to catch-up with any session missed.

CODING IN COMMUNITIES AND SCHOOLS

The organization expanded the coding program to other communities and schools. East Airport International School was the first school to embrace the coding program as an extracurricular activity. Later, Alpha Beta School, Dansoman opened its doors to IIPGH. Educase Literacy Consult, Ogbodjo-East Legon remains a committed partner of IIPGH for the Coding Community since 2018.

The coding program was also extended to other regions. In 2018, the team traveled to Tarkwa and organized a vacation coding bootcamp in collaboration with The University of Mines and Technology (UMAT) Computer Science Department, for JHS graduates. In 2019, IIPGH team returned to the Western Region and organized vacation coding program for students of Greater Heights School Fijai and other students in Takoradi.

Since 2018 Alpha Beta Educational Complex has adopted the coding for kids program as one of its extracurricular activities. In addition, during vacations, students from Alpha Beta and other schools are given the opportunity to use the facilities of the school for the coding program. In 2021, the Institute in partnership with Code for Afrika, trained two (2) tutors of the school to self-manage the coding program for the school. Alpha Beta tutors who completed the



train-the-trainer program are now fully in charge of the coding program in the school, making them the first school to successfully take over the coding program and run it internally.

ONLINE CODING ENROL-MENT

On the average, 300 active students have lessons every week with over 30 trained instructors. A class size is kept between 10-12 students and this makes the training session very effective.

Lessons for students in primary to secondary are carried out on weekends-Saturdays (10am or 4pm) and Sundays (2pm or 4pm).

Adults or professionals have their lessons during the week in the evening, 7:00pm – 9:00pm GMT



PROCESS OF SIGNING UP FOR THE ONLINE CODING LESSONS



MODULES

Below are the weekend coding modules for kids. Each module is 24 lessons (sessions) and each session is 2hours. It takes 3months to complete a module and there are 8 modules for each category of students. The students are in two (2) main groups: 6-10 years and 11-15 years.

At this level the students are first introduced to block-based coding and some of the programming languages being taught are: Scratch , Code it!, Tinker-Toys (3D design), App Inventor

CODING AS EXTRA CURRIC-ULAR ACTIVITY IN SCHOOLS

The Institute is open to collaborate with schools to introduce the coding program. IIPGH before covid-19 pandemic established coding centres in several schools. Below is the grouping of the courses and some guidelines on how the extracurricular coding program is being run in some schools.

CODING LESSONS AND TUTORS

Trained instructors from IIPGH will be assigned to the school. The tutors will lead and support the students with the coding program. A minimum of 25 registered and paid students are required to start each group labelled above.

Each group will have separate coding lessons at least once a week. Each Coding lessons is 2hours (after school preferably).There shall be minimum of 10 lessons within a term. At the beginning of the coding program, students shall visit the Digital Design & Creative Coding Hub of IIPGH to be exposed to other tools and devices such as the 3D printers, smartboards etc.



Class Grouping and Courses

		2
Group	Classes	Coding Program
Lower Primary	Primary 1 - 3	 Scratch Code it! TinkerToys (3D design) App Inventor
Upper Primary	Primary 4 - 6	 Scratch Code it! TinkerToys (3D design) App Inventor
Secondary	JHS/SHS/IGSCE	Web Design 1 (HTML /CSS) Web Design 2 (JavaScript/- Bootstrap) Web Design 3 (WordPress) TinkerToys (3D design) Python Programming

Elikem Gador



PARTNER SCHOOLS AND ORGANIZATIONS WHERE IIPGH CODING PROGRAMS HAVE BEEN DELIVERED



IIPGH has setup coding lessons in a number of schools and communities

Our unique coding method has been introduced at:

Digital Design and Creative Coding Hub (Circle) Alpha Beta School (Dansoman) Educase Literacy Consult (East Legon, Ogbodjo) Datus International School (Tema) Angels Specialist School (Tema Comm. 12) Ivy Preparatory School (Oyibi) Jack & Jill school (Roman Ridge) Manet Court (Spintex Road) Oasis International School (Greda Estate) Shield International School (Adenta) Redwood Universal (Dzorwulu) International Community School (East Legon) Kids Club House (Devtraco, Tema Comm. 25) West Hill School (New Bortianor) Greater Heights School (Fijai, Takoradi) University of Mines & Technology (Tarkwa) Many more...



Coding for Adults and Professionals

IIPGH Coding for Adult program is focused on Data Science. It starts with Python for professionals. Python is a general-purpose programming language and can be used to develop desktop and mobile applications, big data processing, embedded systems, and also used in the fields of Data Science, Machine Learning, Artificial Intelligence and Cyber Security, for great projects.

The modules are:

- Python Beginners for Professionals
- Data Analytics & Visualization
- SQL & Databases
- Machine Learning & Artificial Intelligence (AI)
- Big Data & Data Mining
- Intro to R, Scala & Julia

Lessons are delivered online via Zoom during weekdays in the evenings. There are also bootcamps that are on-site as crash course.



FUN AND EXCITING WAYS TO TEACH KIDS CODING

By Barbara Asiamah

Give students the opportunity to work in teams.

The use of group learning practices in the classroom or during sessions has been extensively researched. When students study together, they recall information more quickly and for longer periods of time, develop critical thinking skills, and improve communication skills. These are just a handful of the advantages kids gain from group work.

Give students a brain break

Every day, students work exceedingly hard and deserve a break. Most teachers can recognize when their students have had enough and need to be re-energized. Taking brain rests during class sessions help students study more effectively.

Limit class rules

A plethora of class rules and expectations can stymie learning. Choose three to five specific and attainable rules and try to stick to them.

Student-turn-teacher days!

Students can also teach others. This allows pupils to review what they've already learned while also developing their leadership skills at a young age. Children have a lot of fun playing the role of boss. Choose topics for students to teach over the course of a few minutes or the entire session.

Use examples kids can relate with

Students learn better when examples and exercises are based on things they can relate with and find around them. This eliminates the possibilities of students being confused and allows them to be more comfortable and expressive during sessions.

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Pioneers of Coding for Kids Program

IIPGH LAUNCHES DIGITAL DESIGN AND CREATIVE CODING HUB

.... to improve digital literacy in Ghana



Author: Richard Kafui Amanfu (Director of Operations, Institute of ICT Professionals, Ghana)

"Coding is an exciting new field that presents a world of opportunities for people who are willing to learn"



Coding has exploded in recent years, changing from something used in computer games and the occasional electronic device to something which shapes how we live in the modern world. This means that now is an excellent time for learning how to code.

Coding is an exciting new field that presents a world of opportunities for people who are willing to learn. Despite what you may have heard, learning to code is not that tough, especially when you compare it to the skills that are required to get the most skilled jobs. A few months of hard work will leave you confident in at least one programming language. Learning to code for kids or beginners for more than a few months should give all the skills that are needed to become a career coder if that is the target.

The Institute of ICT Professionals Ghana (IIPGH), as a professional association and a capacity-building organization, with an objective of focusing on the early start, has over the years trained children from age 6, through to adults and professionals in emerging technology-focused capacity-building programs. From its inception, the organization has trained over 15000 participants in its coding programs, tailored for children and beginners, and continues to progress both in Accra and beyond, in its training and awareness coding program.

As part of expanding its awareness programs, IIPGH in May 2021 together with its partners, Code-it! and TinkerToys, from Leipzig, Germany, successfully launched its Digital Design and Creative Coding Hub in Accra. The Hub (one of the many coding projects of IIPGH for young ones) is a showroom for tools and concepts used in digital learning and creative work for innovative and creative projects. It is also a center for national and international exchanges. The tools and concepts are cur rently accessible to everybody who is intererested. Since its launch, over 400 children between ages 6 and 13 have been taught and exposed to digital tools and what digital design and creative coding are all about. This project was supported by the "Creative Resources" program of the German Federal Foreign Office.

The idea of a Digital Design and Creative Coding Hub is to tackle the many digital challenges in our developing environment, to improve digital literacy in Ghana, and to instigate an international knowledge transfer. This infrastructure is equipped with internet access, laptops, a smart interactive board, 3D printers, all in a welcoming and secure environment for children and adults.

With Internet available at the hub, students and participants can connect their computers to access a wide range of learning materials. With the use of the smartboard, they are also able to interact with others who can only connect via platforms such as zoom or any other. The smartboard makes learning very interactive, as tutors and students get to experience effective audio and visuals. With our 3D (3 dimensional) printing devices at the hub, students are taught the construction of three-dimensional objects through creative coding and design skills.

Creative coding is the artisan side of programming. In creative coding, computer programming is used to create something expressive instead of something functional. Focusing strongly on creating interactive experiences in creative coding, the program moves past the sequential prob lem solving found in typical beginner programming and coding courses. In this field of coding, artists, designers, and creatives apply programming concepts to work in a variety of media, such as 2D/3D graphics, animation, image, sound, and video processing. The Digital Design and Creative Coding project successfully trained and transferred knowledge from training partners Code it! and TinkerToys, to 25 participating tutors. Code it! and TinkerToys software is a learning platform and digital construction kit (respectively) for learning programming, and teaching children and beginners the basic concepts of programming, in a simple and practical way. This allows children to create their own 3D designs easily and intuitively – e.g., robots, own game figures, houses, cars, cities, flying objects, etc

IIPGH aims at equipping the public, professionals, and students with skills in emerging technologies needed for entrepreneurship and employment in today's fast-moving technological world. Thus, this project birthed a 5-session practical program spread over 5 months dubbed the Students Live Coding Activity at the Hub to expose children to digital tools and modern learning. This also gave tutors the opportunity to use modern teaching methods to reach out to many, both physically and remotely – supporting learning processes creatively and successfully. All 5 editions (May, June, July, August, and September) took place at the hub in a hybrid mode – blending physical and online participation. Each workshop edition housed about 40 children and many others connecting online via zoom and Facebook applications. The tutors took them through the Code it! Software and TinkerToys design and construction application. It was a very interactive moment that had the children answer questions throughout the program and rewarded with 3D designs and printed items

> "IIPGH aims at equipping the public, professionals, and students with skills in emerging technologies needed for entrepreneurship and employment in today's fast-moving technological world."



Prince Ofosu Sefah CEO, GIFEC



What next after this activity?

As the Students Live Coding Activity at the Hub has just ended, we continue to call on all interested stakeholders to collaborate with IIPGH to support learning processes creatively, and promote ICT skills development to all, towards the achievement of the Sustainable Development Goals (SDGs). Prior to the end of the students' live activity at the hub, it caught the attention of a few organizations, including IT Consortium - one of Africa's leading financial services technology solutions providers. IT Consortium joined forces with the Institute to launch The Coding Caravan (TCC) in August, introducing technology skills (coding {computer programming}, 3D designs, and 3D printing) to over 250 young people in Accra and Ho.

Programming is becoming a mandatory part of school education, and in professions and social fields, programming skills are becoming a prerequisite. The Institute of ICT Professionals Ghana and its partners continue to invite corporate institutions, civil society organizations, and go ernment agencies to team up for more training and awareness programs in communities, to drive the message of ICT practical skills development for young people. The future can be brighter if we make a conscious effort in preparing our young ones



Technology education and skills development should not be the preserve of the affluent in our society, it must be democratized and accessible by all. This is because emerging technology skills are now essential tools for employment in the 21st century and in the next decade may become requirement for any type of job - David Gowu (Executive Director, IIPGH).







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CODING EDUCATION FOR GHANA PROGRAM



CODING, The 21st Century Skill





The idea to create sustainable opportunities by training young ones and creating the next future leaders in technology was addressed in a 4-hour long stakeholders' workshop, concluding the first phase of the Coding Education for Ghana program, through "The Coding Caravan" in October and November 2021.

Background and Objective

Technology education and skills development should not be the preserve of a few in society. It must be democratized, revolutionized, and accessible by all. 21st century skills have become a necessity for survival in this age as innovation and emerging technologies are on the rise and at a faster rate. As the purpose of every education system is to make capable graduates to fit and function effectively in their environment, these skills have become inevitable. The main objective of the program is to build teachers' and trainers' capacity to suppor Ghana's coding education, and to impart that knowledge, thereby unearthing creativity in children by learning to code. Also, it is to improve local partners' capacity in implementing hands-on coding projects, to promote and strengthen coding education in Ghana. Thus, the program seeks to develop a modular framework to integrate art and visual programming into the Ghanaian educational context, to ignite or enhance the development of digital skills. This can be achieved by fostering closer collaboration among education provid ers, policymakers, and other relevant stakeholders in the field of ICT in Ghana, with private sector organizations, such as IIPGH.

Driving an emerging technology-focused capacity-building program to prepare the next generation for entrepreneurship, and new job requirements in today's fast-moving technological world, the Institute of ICT Professionals Ghana (IIPGH) together with its partner, Code for Afrika, from Leipzig, Germany, has embarked on Coding Education for Ghana program. The program aims to strengthen computer science education in Ghana through coding and enhance computational thinking skills in children since these skills are considered valuable in the 21st cen tury. Skills such as creativity and innovation, digital fluency and literacy, collaboration and communication, exploration and problem-solving, critical thinking,

and analysis, are considered essential for all learners irrespective of their fields of interest. The project, developed and tested, offers a simple and motivating introduction to computer programming for children (from 8 years), - conveys basic programming concepts, introduces compu tational thinking, and shows the creative potential of programming. This program rode on the back of "The Coding Caravan", launched in August 2021.

The 21st Century Skill



Why learn to code?

In our digitized world coding is becoming an integral part of literacy. To understand and change our digital world, which is increasingly determined by algorithms, one needs at least basic programming skills. Learning to program is no longer just for computer specialists and software developers - in many countries, program ming is becoming a mandatory part of school education. In more professions, and social fields, programming skills are becoming a prerequisite.



THE CODING CARAVAN WITH CODE FOR AFRIKA

Given the opportunity and exposure, every child has brilliance. As the skill of the future, it is necessary to introduce coding to every child, strengthening the basics from an early start. Building the youthful population and huge human resource asset of Ghana and Africa, skills development training, particularly in the technology-related fields, needs to be introduced early in their formative years before they are out of school. The first phase of the Coding Education for Ghana program had "The Coding Caravan" in three locations: Kasoa, Takoradi, Koforidua, and ended with a stakeholders' workshop in Accra. The Coding Caravan introduces coding basics to young ones, aiming at implementing creative ideas - as one can create computer games, interactive animations and graphics, and many other applications. It offers all children and beginners an easy and playful introduction to programming. Tutors during the caravan took turns in each session teaching participants practically and playfully to code. With assistants, teaching and learning are made easy as the assistants are seen going round to help students to follow the lead tutor in an instructional method. The Coding Caravan carries along on all roadshows over 150 (one hundred and fifty) laptops, well charged to be able to stay up when faced with electricity challenges. The caravan also makes available its 3D printers to print and showcase 3D designs from creative coding.

With no prior programming knowledge required, participants can learn to code using software such as Codeit!, practicalizing digital design and creative coding, and 3D printing.

CODE FOR AFRIKA

KASOA CODING CARAVAN

The Coding Caravan in Kasoa coincided with the celebration of the International Day of the Girl Child. 11th October is celebrated worldwide as the International Day of the Girl Child. A special day to recognize and empower girls. The caravan decided to celebrate this day in a community to introduce coding to girls in Kasoa. Golden Pride International School was the host for the day, and other students from adjoining schools in the community were allowed to participate in the program. About one hundred and ten (110) girls in two batches, were introduced to coding and other digital skills.





TAKORADI CODING CARAVAN

Takoradi was the second of three locations planned for this Coding Education for Ghana program. On October 22, 2021, the caravan arrived in Takoradi scheduled for a 2-day workshop for two schools, namely Rev. Grant Methodist JHS, and St Anthony of Padua Catholic School. With great enthusiasm and testimonies, both schools expressed more interest in this program, hoping to have regular exposure to coding concepts and development. At Rev. Grant Methodist JHS, we had over 100 (One hundred) students participating in the program, while St Anthony of Padua Catholic School offered a bit over 150 (One hundred and fifty) students, between ages 8 and 15. This was a very revealing moment for St Anthony of Padua Catholic School especially, as they have already been preparing for a technology competition.





KOFORIDUA CODING CARAVAN

The last location was on the 6th of November, in Koforidua, at Aspire Educational Complex where over 150 (One hundred and fifty) students participated in 3 sessions. The first and second sessions had students from Aspire Educational Complex, while the third session of 50 students came from other selected public schools in the community (Okrase Methodist Basic School, and Edwisu Mile 50 MA School). Just as many others, these students were inspired to learn to code, exhibiting their creativity, confidence, and interests.





STAKEHOLDERS' WORKSHOP

The Coding Education for Ghana program was climaxed with a stakeholder's workshop, which invited all participating schools in the Coding Caravan. Representatives from the three locations of the caravan (Kasoa, Takoradi, Koforidua) were present. Other participants from the maiden TCC in partnership with IT Consortium were also present from three locations in Accra (Oksart Place, Kwame Nkrumah Circle; Alpha Beta School, Dansoman; Shield International School, Adenta), and one location in Ho, Volta Region, Ho-Dome RC Primary/JHS School Complex. A representative from the Council for Technical and Vocational Educational Training (CTVET) participated in the workshop, as well as the President of Academic City University College, Prof. Fred McBagonluri.

The workshop which took place on the 29th of November 2021, at the Fiesta Royale Hotel, Accra, brought together relevant stakeholders to evaluate the pilot coding programs in schools/communities and to formulate implementation strategies for its sustainability. The workshop lasted 4 hours with a presentation of the concept note of the coding education program, and group round table discussions. All three groups made valuable evaluations, and strategies for sustainability, out of which all suggestions will be fine-tuned for implementation.

Learning to code is a lifelong activity. The Institute of ICT Professionals Ghana as a confident organization in capacity building encourages students, parents, educators, and administrators to take a keen interest and sign up for this skill development program to prepare young people for the future of work. Corpo rate, Civil Society organizations and government agencies are invited to collaborate with the Institute, and its partner, Code for Afrika, to promote coding in communities (both urban and rural) across the country, to drive the message of ICT practical skills development for young people. Other platform developers/providers are also encouraged to come along to make their platforms available for coding and other skills development programs. The future can be bright if we make a conscious effort in preparing our young ones.







Oracle Academy & IIPGH Organize Coding Boot Camp for Students in Ghana

DIGITAL SKILLS FOR JOBS

Article by Kpegah Edem Christian

The Digitalisation drive of the Government of Ghana requires digital skills development of the youth to take advantage of new jobs being created as a result of the digital transformation initiatives. To contribute towards developing the skills of young people, Oracle Academy (OA) in partnership with the Institute of ICT Professionals Ghana (IIPGH) organized a one-day virtual coding boot camp on 19th October 2021, for undergraduate students in Ghana on how to build scalable enterprise applications using Oracle Application Express (APEX).

The training was attended by close to 300 participants from over 30 tertiary institutions in Ghana. Most of the participants were students of the University of Ghana, Tamale Technical University, Kwame Nkrumah University of Science and Technology, University of Cape Coast, Ho Technical University, Accra Technical University, Ghana Communication Technology University, Kumasi Technical University, and University of Professional

"Oracle Ghana revealed that Oracle is keen on getting more developers to learn APEX in Ghana because, as an emerging technology country, Ghana has an enormous youth population with unimaginable cosmic potential."

Studies, Accra. The participants were extremely appreciative and enthused about the training.

INSTITUTE OF ICT

In his opening remarks, Mr. Eric Hagan, Service Sales Account Manager, Oracle Ghana revealed that Oracle is keen on getting more developers to learn APEX in Ghana because, as an emerging technology country, Ghana has an enormous youth population with unimaginable cosmic potential. He further stated that such an opportunity will open some avenues for some global application development giants to emerge from Ghana.

Oracle APEX is a low-code development platform that enables users to build scalable, secure enterprise applications, with world-class features, that can be deployed anywhere. Using APEX, developers can quickly develop and deploy compelling ap plications that solve real problems and provide immediate value. You won't need to be



an expert in a vast array of technologies to deliver sophisticated solutions. Focus on solving the problem and let APEX take care of the rest.

Brief submissions by Guest Speakers

The training, which was moderated by the Executive Director of IIPGH; Mr. David Gowu, kicked off with a brief welcome message from him. He then continued with the program outline explaining the order in which the various speakers would present.

The opening remark was followed by a welcome note from Mr. Samuel Etteh, Senior Solutions Engineer, Oracle. He expressed appreciation to Oracle Academy and IIPGH for putting together this enablement session for students. He encouraged the participants to embrace the training to improve their skills and marketability in this ever-changing job market. He also advised the participants to seize the opportunity as a starting point to accelerate their skill sets to develop practical solutions that can make them competitive in the job market. Mrs. Bekere Amassoma, Oracle Academy Program Manager for Sub Saharan Africa gave an overview of Oracle Academy and how students can benefit from it. She emphasized why technology knowledge and skills are key. She added that; well-paying jobs in nearly all fields require computing knowledge, and there are more open technology-related jobs globally than there are skilled workers to fill those jobs.

She also spoke on the free teaching and learning resources for educators and learners. Learners and educators have access to Oracle Academy academic curriculum, career Learning resources, Oracle Professional Certification Pathways, and Oracle Cloud. She encouraged the participants to take professional certification courses to give them a competitive edge over their peers. She concluded by encouraging institutions to join Oracle Academy for their teachers and students to enjoy all the fr teaching and learning resources. Mr. David Gowu then concluded the guest speakers' session by enumerating the aims and objectives of IIPGH as follows: mobilizing professionals, students, and businesses; training students and professionals; educating the public; influencing policy formulation; providing opportunities through networking; leading in technology advocacy.

He also mentioned that the institute runs a Digital Design & Creative Coding Hub in Accra and satellite centers in other cities where young people are trained in emerging technologies, 3D design, coding, and many others.

Training

Mr. Chaitanya Koratamaddi, Senior Principal Product Manager of Oracle APEX, who is one of the facilitators, made a presentation on the topic "Beginner's guide to Oracle APEX". He said data is the world's most valuable resource and the most critical and valuable asset for any organization. Data-driven organizations are far more valuable because of the insight from analyzing their data.

He said a low-code development platform (LCDP) will help solve some of the challenges faced by organizations. LCDP is a software that provides an environment programmers use to create applications through graphical user interfaces and configuration instead of traditional computer programming. LCDP is easy on-ramp, super productive, accessible, scalable, extensible, and has rich functionality. Research by Gartner concluded that "By 2024, low-code application development will be responsi ble for more than 65% of application development activity." He mentioned Business Analysts, non-IT Professionals, IT Professionals, Database Developers, Database Administrators, DevOps, and Students as those who can use LCDP.

He also explained Oracle APEX, its characteristics, and architecture. He talked about Oracle APEX application development service which consists of APEX Application Development and Deployment, Oracle Autonomous Database and Exadata, and Cloud Infrastructure which is free forever. He concluded by demonstrating how to create an application on APEX using data from a spreadsheet and also took the participants through a hands-on lab to create an application using APEX. You can read Oracle APEX more on via. https://apex.oracle.com.

The second Facilitator; Mr. Salim Hlayel, Product Manager, Oracle APEX, took the participants through another hands-on lab on Oracle APEX Shopping Cart. You can use this link bit.ly/shopping-cart-lab to access the hands-on manual for creating a shopping cart application using APEX. He concluded by urging the participants to keep on practicing and create other applications using APEX.

In her closing remarks, Mrs. Bekere Amassoma thanked the facilitators, guest speakers, IIPGH, and the participants for their dedication, time, and effort for a successful program. She hoped the students would be able to take the training forward and come out with great solutions that can solve problems in Ghana.

Mr. David Gowu also showed appreciation to Oracle Academy for bringing such an opportunity to students in Ghana, and also thanked the students for attending the training

About Oracle Academy & Institute of ICT Professionals Ghana (IIPGH)

Oracle Academy is Oracle's global, philanthropic educational program that advances computing education around the world to increase knowledge, innovation, skills development, and diversity in technology fields. Oracle Academy offers educators; Oracle cloud technologies, software, support, and professional certification resources.

The Institute of ICT Professionals, Ghana (IIPGH) is a professional association that is made up of professionals in various domains of Information and Communication Technology (ICT) practice. The Institute is a connector of ICT professionals from Go ernment MDAs, educational institutions, corporate organizations, start-ups, investors, and civil society organizations to create a vibrant ICT ecosystem.

ORACLE Academy

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How to Learn Game Development on Your Own

Kwamina Dawson Amoah



As the game development industry expands, more people are becoming interested in pursuing careers as game developers. Even as a recreation, game development piques the curiosity of those interested in both programming and gaming. It can be difficult to know where to begin in this subject because it requires such a high degree of expertise. I have been self-learning game development for about three years now and, in this article, I am going to share a few thoughts on how best one can cultivate the skill. I am going to adopt a bottom-up approach as there are some basic skills and tools that one needs to be effective in this field of videogame creation.

Computer Hardware

Game development is heavily dependent on a computer's system and it is therefore very important to get a computer that best suites the purpose. Computers with high end specs will make your journey easier, generally. But, please bear in mind that you do not necessarily need to acquire an expensive computer. If you can lay hands on a moderate computer with mid-range specs, that should be enough, for starters.

Computer Software

Computer programming is perhaps the most critical skill you need to learn on your path to becoming a game developer.Typ

ically, a videogame's backbone is programming. It is a good idea to learn the fundamentals of some coding languages such as C++, C#, Python, and Java, to mention a few. It is imperative to create a foundation of coding knowledge if you do not already have one. This will serve as the framework for the rest of your studies. C++ is the most widely used coding language in videogames, and it is a wonderful place to start, if you are interested in becoming a game developer. Art tools and graphics software such as Blender, Maya, and Adobe products such as Photoshop, to mention a few, are needed as part of your toolbox. They help in modelling of characters and the designing of game user interfaces (UI).

Game Engine

Game engines aid in the rendering of images, the provision of audio functions, the animation of graphics, and a variety of other duties. Unity, Unreal Engine, CryEngine, Open3D Amazon are examples of some of the game engines currently available for developers' use. Each engine has one or more programming languages that are used in conjunction with it. For instance, Unity game engine uses C# and Java as its backbone programming language. It is of essence to choose an engine after understanding the fundamentals of programming. The engine of your choice will be the platform on which your first game will be built as well as the programming language you need to specialize in!

Mimic Existing Games

It is now time to get to work after you have established a basic level of comfort with the game engine you have chosen. Imitate an existing game with the help of online tutorials, for example, YouTube game development tutorials. It is preferable to begin with a game that is quite basic. While this may appear tedious, it is essential for you to be able to grasp the fundamentals of game development. As you gain more experience with coding, and the game engine you are using, by imitating existing games, you can gradually add your own unique features. It is helpful to request for feedback on your games and learn new programming languages to sharpen your newly-acquired skills.

Community Forums

It can be beneficial to find a community of other aspiring game creators while you learn the skills required for game production. This community can greatly assist you by sharing knowledge, resources, and advice. You may be fortunate to also find experienced developers who may serve as mentors. Examples of such communities on Reddit, for instance, are r/gamedev and r/indiegaming. There are forums like gamedev.net and freecodecamp.org where one can seek help and solve others' problems when needed

Final Word

To conclude, game development is not an easy task and it requires dedication and resilience to push yourself past your limits. It is stressful and demands a lot of time but with patience and hard work, anyone can become a game developer. Though it may seem scary at first, do not give up. Just persevere and you will be fine. I wish you a thrilling jolly ride with gaming and may you live to share your accomplishments soon!



The writer is a Level-400 student of the University of Cape Coast in the Computer Science and Information Technology Department. He is a co-developer of the soon to be released computer game dubbed "GhanaGame".



The Coding Caravan

IT Consortium and IIPGH taking ICT Skills Programs into Communities

Technology education and skills development should not be the preserve of the affluent in our society, it must be democratized and accessible by all. This is because emerging technology skills are now essential tools for employment in the 21st century and in the next decade may become a requirement for any type of job. In order to prepare the next generation and equip them with the skills needed to fit into the demands of the future, IT Consortium, one of Africa's leading financial services technology solutions provider, celebrating its 20th anni versary this year, joined forces with the Institute of ICT Professionals Ghana (IIPGH), to launch The Coding Caravan (TCC).

The first phase of the technology skills awareness program was carried out in August, where over 250 young people in Accra and Ho were introduced to coding (computer programming), 3D designs, and 3D printing.

The Coding Caravan was carried out as workshops, where laptops and coding software were made available for students to learn. Instructors from IIPGH and staff of IT Consortium supported the children to code. For some of these kids, it was their first coding experience. Most of them were surprised they could put together codes in sequential order and produce meaningful outcomes.



Ghana's population is youthful with approximately 57% of nearly 30million of the population being below 25years according to the Ghana Demographics Profile published by indexmundi.com. This youthful population can become a huge human resource asset to Ghana, Africa, and the world at large, if skills development training, particularly in the technology-related fields, are introduced early in their formative years before they are out of school

The world is racing at a faster rate and is constantly in need of innovators that can use technology to come out with the next big product that will bring efficiency and enable business growth. Areas such as Artificial Intelligence (AI), Internet of Things (IoT), Software Engineering, Robotics, Application Development, Virtual Reality (VR), and Augmented Reality (AR) are some of the emerging technology areas that will be in demand by 2030, according to World Economic Forum report 2020 The Institute of ICT Professionals Ghana (IIPGH) being a professional association of technology experts, is driving an emerging technology-focused capacity-building program to prepare the next generation for these new job requirements. In order to achieve this objective, IIPGH launched the coding for kids program 3years ago and expanded the training program to cover all levels (children, the youth, and adults/professionals). The practical skills development program quickly expanded to all parts of the country, with over 10,000 students ready trained in different coding pro-

ready trained in different coding programs and other IT-related skills training. However, there are still so many people to be trained. To extend coding and other ICT skills development programs to more students, particularly children from underserved or deprived communities, IIPGH collaborated with IT Consortium to run the coding caravan in 4 communities during the month of August 2021. IT Consortium has been involved in the skills development of young graduates as part of efforts to grow tech skills in Ghana and across Africa.

However, this year, as the organization celebrates its 20th anniversary, management and staff want to go beyond training graduates to training kids in communities. The organization believes that its staff who are working in the technology space will serve as champions and role models that will positively influence young people, especially girls, to embrace technology skills development programs such as coding.

Every child needs to be introduced to coding as it is being touted as the skill of the future. However, limited resources will hinder a nationwide first-time deployment of the project. The partners, therefore, agreed the first phase will target



Coding Caravan First Stop - Oksart Place, Kwame Nkrumah Circle

three (3) communities in Accra and one (1) community outside the capital. After an online advertisement for parents to register their kids and arrangement of children from underserved communities in Tema Newtown, on 7th August 2021, over 50 students converged at the Digital Design and Creative Coding Hub of the Institute of ICT Professionals Ghana (Oksart Place, Kwame Nkrumah Circle). At the Hub, laptops were made available to each child present, as they were guided in an intensive but fun learning environment.

The volunteers (staff of ITC) and tutors from IIPGH, gave the children a memorable experience in designing things in 3D using the interactive smartboard and the portable 3D printers. The interactive session gave the children the opportunity to ask questions on Code-it and Tinkertoys (some of the new software used during the coding lessons). They were also fascinated by the 3D printer and were ver



curious to know more about its functionality. The children were given some of the objects designed and printed. At the end of the program, the children were served with packed lunch and drinks. The first workshop ended with smiles on the faces of all participants and all COVID-19 protocols were observed.





Coding Caravan Second Stop - Shield International School, Adenta

The Coding Caravan was designed in a way that every week, the team will organize a workshop in a community. This will afford the volunteers who dedicate a day out of the week, to help young people without impacting too much on their already busy work schedules. The second stop took place at the Shield International School in Adenta on the 13th of August 2021. The setup in the Adenta community was unique. Although the team selected a good private school to host the workshop, the event was held on a day when the students were not in school. Rather, children were randomly invited, particularly from the deprived communities where most of them attend public schools. Other students were also selected from public JHS in Madina to participate in the workshop.

The experience was the same as the first stop, however; it was observed that some children who were randomly called from the street and communities struggled to use the computer. Some admitted it was their first time using the computer and following coding instructions was a bit difficult. However, at the end of the program, the students were happy about the concept and were yearning to learn more.



Coding Caravan Third Stop - Alpha Beta School, Dansoman

In every community, the organizers of TCC strived to give equal opportunities to students in privileged private schools and public schools. A quota system was adopted where some children from the community and others from public schools will join the stu dents at the school hosting the workshop. The Dansoman workshop had all these three (3) groups fully represented and a successful program was carried out at Alpha Beta Educational Centre, Dansoman, on 20th August 2021.

Management of the school and the tutors were actively involved in the entire preparation and organization of the coding workshop. The students were enthusiastic about the new things they were being intro



duced to, and the workshop was very interactive. Students from Dansoman Basic II JHS were very active and could follow all the steps. The workshop ended as one of the best organized coding programs.

Coding Caravan Final Stop - Ho-Dome RC Primary/JHS School Complex, Ho.

After three (3) stops in Accra, TCC embarked on a trip to Ho, Volta Regional capital, to engage students in the Ho Municipality. With the help of Genius IT Foundation, the local partner of IIPGH, Ho-Dome RC Primary/JHS School Complex was identified as a suitable host for the coding workshop on the 27th of August. The headmaster of the school was actively involved in organizing the venue for the program and ensured maximum participation of the students. As was done at previous workshops, information was put out in viting the public to bring children to participate in the workshop. There was an overwhelming response, with over 120 students participating in the workshop. To serve all the children, the training was conducted in batches. The first batch comprised younger chil dren, having their workshop in the morning while the older ones had their turn in the afternoon.



The first phase of the coding caravan has been successful with coding and other technology skills introduced to over 250 children/young people in Accra and Ho. The reception was great, and the children embraced the concept. While this is a good indication that all other communities in Ghana will need such awareness programs, it requires collaboration with more stakeholders. To achieve this bigger objective, the Institute of ICT Professionals Ghana and its partners are inviting corporate institutions, civil society organizations, and government agencies, to team up for more roadshows and awareness programs in communities, to drive the message of ICT practical skills development for young people. The future can be bright if we make a conscious effort in preparing our young ones.









Opuni Frimpong Lead Instructor



Barbara Asiamah Instructor



Blessing Momoh Instructor



Godfred Sintim-Misah Duah Supervisor



Supervisor



Deborah Ofori-Dartey Supervisor



Emmanuel Teye Instructor



Eric Abedi Instructor



Gabriel Nii Amarh Ashitey Instructor



Clement Amanor Instructor



Christian Edem Kpegah Instructor



Ivy Odametey Instructor



Jason Akbar Instructor



JEFFREY VAVA Instructor



Joseph Bornrich Instructor



Joshua Gblorkpor Instructor



Kofi Owusu Instructor



Kojo Sikah Instructor



Maxwell Tetteh Instructor



Michael S.K Tenu Instructor



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Obeng Kobina Joshua Instructor



Opoku Amaning Instructor



Akintola Ramota Instructor



Peter Ayittah Instructor



Stephen Darkwah Instructor

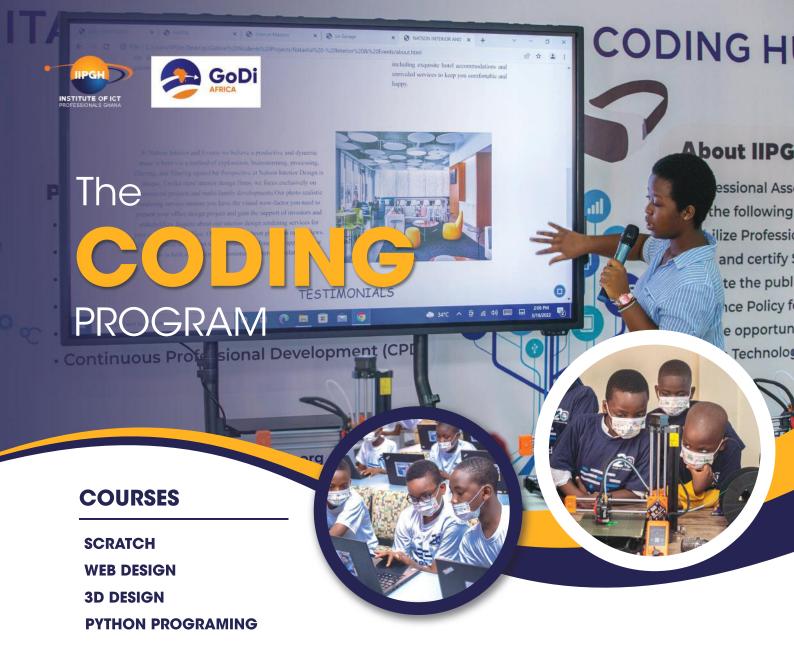


Vincent Chrisbone Instructor

IIPGH Coding **Facilitators**







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IIPGH Donates Computers to Ve-Golokwati RC Primary School to improve ICT Literacy

Digital literacy has become so important in the 21st century and is applied in manufacturing, services and other industries. It is therefore necessary to create a level playing field for every child, whether in the cosmopolitan cities or remote rural areas, to access tools such as computers that will help them acquire practical digital skills. While some young people in the cities are fortunate to get access to some of these tools, most children in the towns and villages are faced with this huge digital divide where basic tools like computers are not available in schools for digital skills education. In order to contribute towards solving this equipment deficit problem in rural schools, the Institute of ICT Professionals Ghana (IIPGH) as part of its 5th anniversary celebration, donated 10 Desktop com puters to Ve-Golokwati RC primary school in the Afadzato South District of the Volta Region on Tuesday 8th March, 2022. The donation was made at a short ceremony in the presence of the cheerful and visibly excited pupils of the school.

The computers were received by the Headmistress of the school, Madam Theodora Akosua Awumey, in the presence of the Afadzato South Ghana Education Service (GES) District Director, Dr. Esther A. Yeboah-Adzimah; Assemblyman for Ve-Golokwati, Mr. Evans Edem Gaka; School Management Committee Chairman, Mr. Augustine komla Eloh; the GES training officer of the district, Madam Henrietta Sindv Adiko; and teachers from Ve-Golokwati RC primary school. After presenting the computers and its accessories, Executive Director of the Institute of ICT Professionals Ghana, Mr. David Gowu, admonished the students and the staff to take care of the desktops so that when IIPGH returns, more computers will be added to the ones donated. Mr. Gowu added that the institute will be back with some of its professionals in the ICT industry to support the staff and students put the computers donated to good use by providing ICT training in areas such as coding.

"We want these children to learn how to create games, animations, design objects in 3D, develop websites and other creative things using the computer so they can develop their skills", the Executive Director of IIPGH emphasized. Mr. Gowu was accompanied by the Director of Operations of IIPGH, Mr. Richard Kafui Amanfu, Director of Administration of the Institute, Madam Gifty Mottey and other volunteers from the institute.

The GES District Director Dr. Yeboah-Adzimah, on behalf of the management and the school, thanked IIPGH for the kind gesture. She indicated that the institute is now a friend of the district and looking forward to more collaborations to promote ICT educa tion in the district. "We are grateful to the institute of ICT professionals Ghana for the donation but like the proverbial Oliver Twist, we are asking for more so other schools in the district can also benefit" she added. The Institute of ICT Professionals Ghana, which was established 5 years ago by a group of technology professionals in Ghana, supports students and professionals with ICT capacity building programs. The organization, with over 2,000 professionals, businesses and students in the ICT sector in Ghana, runs ICT education program for kids dubbed :

"Early Start". The initiative focuses on introducing children as young as 6 years to Coding or computer programming skills. This initiative instituted by IIPGH in 2018, has seen over 10,000 students, predominantly pre-tertiary students (primary and secondary), benefiting from the coding program. These students have acquired relevant 21st century digital skills, that will prepare them for the place of work.

Most of the beneficiaries of this initiative are students in the urban areas or cities. So, as IIPGH turns 5, the coding and other ICT skills development programs are being extended to rural communities, in order to bridge the gap and get children in the suburban, deprived and underserved communities to benefit from emerging technologies skills development programs.

To achieve this objective, the institute organized series of awareness training sessions dubbed "Coding Caravan" in various communities in 2021, to assess the needs of the students and other stakeholders. One of the things identified during the awareness sessions and workshops was lack of computers for the students to have practical lessons. IIPGH therefore acquired used but fully functional computers from Heco Systems Ltd at highly discounted rates to be donated to pilot schools in this category of communities. Heco Systems Ltd operates the LaptopRent-Ghana.com brand where they rent laptops, tablets and other devices to organizations for workshops, trainings and conferences.

Unlike in the past where individuals or organizations donate computers or other ICT devices and the beneficiary schools or institutions struggle to put them into good use, the program being run by the institute of ICT Professionals will ensure that volunteers from IIPGH periodically visit the beneficiary schools and support the teachers and other instructors to use the computers to teach some of the practical ICT training modules such as coding. In doing



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this, the institute will be able to assess if the donations serve the intended purpose. In addition, IIPGH will be able to make a case to other partners to donate more equipment or technology education devices as they could see the results of what was initially donated.



The donations were not limited to the deprived school, the institute of ICT Professionals Ghana also donated two (2) desktop computers to the Afadzato South Office of the Ghana Education Service (GES), to support them effectively carry out their administrative work. Dr. Yeboah, the GES District Director of Afadzato South, received the donations on behalf of the district office. She once again expressed her gratitude to the management and the team of professionals from IIPGH.

Afadzato South was created in 2012 which makes it a new district that needs administrative and logistical support in the areas of education, healthcare among others, to serve the local communities. IIPGH therefore donated some of its computers to the GES office of the district as part of its support towards achieving this goal.











Profile

Go Digital Africa (GODI AFRICA) is a wholly Ghanaian-owned limited liability company that provides modern solutions in Innovative Technology and Telecommunications. Our well diversified portfolio covers the areas of Information Communication Technol ogy, Telecommunication and Human Capacity Enhancement.

We hold three business units in both industrial and consumer businesses, all of which focus on serving clients and communities with the latest technology that enhances their business and lifestyle. These are ICT Solutions, Infrastructure Delivery, Training and Capacity Building.

Our founding members have a total of 60 years' experience in the telecommunications industry, human resource management and capacity enhancement, emerging technologies, project management and operations. Our goal is to create value for clients, our teams, and shareholders. We work to serve our clients with the finest quality built on a strong culture of consistency, loyalty, and high ethical standards. 'Providing consistent quality through a reliable service' is the purpose that unites all our teams at GODI AFRICA

Our Business Units

• ICT Solutions and Consultancy

Cybersecurity Services:

Enterprise Information Technology and Cyber security; Deployment and Management of Security Operations Center; Security analytics and monitoring; End to End vulnerability and security assessments; Information security and cyber security audit services; Design and deployment of enterprise IT infrastructure; Source Code Auditing; Policy framework analysis and situational consulting.

Information Technology Services:

Application development; Website creation and hosting; Digital transformation Services for SME's.

Call Center Solutions:

End to End Call center solution (Queue management, call back management, graphical analytics, social media management, ticketing); Digital Voice Logger and performance monitoring; Helpline solutions with Interactive Voice Response (IVR); Telemarketing Solutions.

• Infrastructure delivery

ICT Infrastructure:

IT infrastructure audit, design and set up; Ticketing and helpdesk set up.

Home and Office broadband Service: Business development model; Technical Advisory services on best fit solution; Industry intelligence gathering.

Telecom Consulting:

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Supply of general IT and electrical goods and merchandise.

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OVERVIEW



INSTITUTE OF ICT PROFESSIONALS GHANA

A professional Association in the ICT industry with the aim of achieving the following;

- Mobilizing professionals, Students & Businesses
- Train and certify professionals
- Educate the public
- Influence Policy formulation

- Provide opportunities through networking
- Lead in Technology Advocacy
- Create meaningful jobs

IIPGH SERVICES MEMBERSHIP, PROFESSIONAL SERVICES, ACADEMY, PUBLIC AWARENESS

MEMBERSHIP

Mobilization of professionals, students and businesses in the ICT ecosystem Membership administration: Recommendation letters, attestations and networking Professional Development Training and Certifications

PROFESSIONAL SERVICES

ICT Consultancy and Solutions for businesses Curriculum review for educational institutions (from basic to tertiary) Job placement and recruitment of experts for companies

ACADEMY

Coding Program (for kids, teens, and adults) in web technologies Professional Skills Development - Python for Data Science for professionals; Cybersecurity; Data Protection; Internet Governance National Teaching Council accreditation - Continuous Professional Development for teachers

Digital skills education (basic, intermediate, advance)

PUBLIC AWARENESS

Articles publication in dedicated column (ICT insight with Institute of ICT Professionals) in the Business & Financial Times news paper and other digital portals.

Workshops, Seminars, Symposiums, trainings for professional development in emerging technology areas such as Data science, Cybersecurity, Internet of Things, Artificial Intelligence and Machine Learning, Data Protection, Cloud Computing

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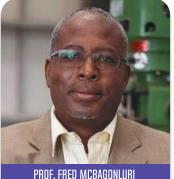
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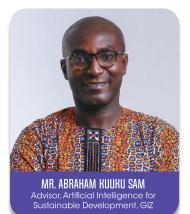
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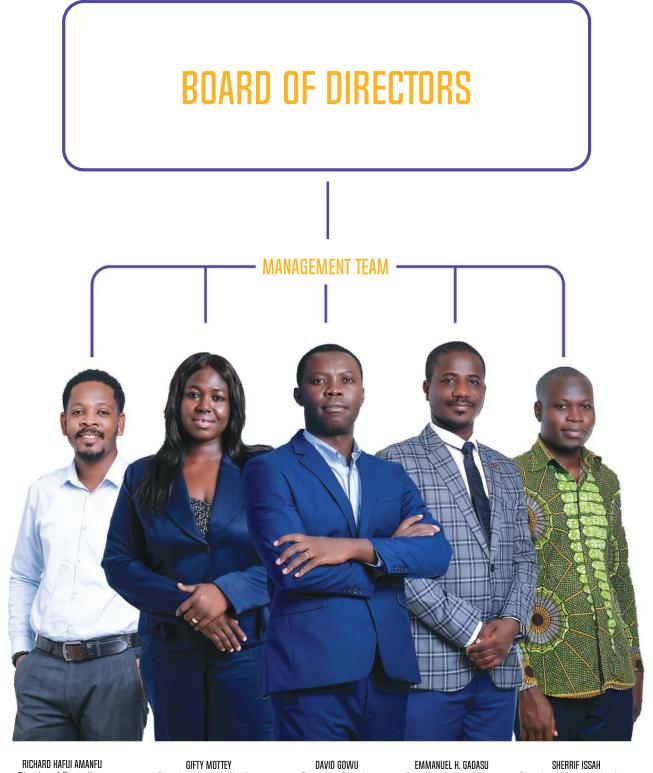
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