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**SECOND SEMSTER.**

**A REPORT ON THE ROLE OF COMPUTER ENGINEERS IN THE ECONOMIC GROWTH, INDUSTRIALAIZATION AND SUSTAINABLE DEVELPOMENT GOALS.**

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**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF ENGINEERING (B. ENG.) DEGREE IN COMPUTER ENGINEERING.**

***CERTIFICATION***

This is to certify that the project is written by **ABAKASANGA ALEXIS JOHN** with matriculation number **17/ENG02/001** in the department of Computer Engineering College of Engineering Afe - Babalola University, Ado Ekiti (ABUAD) during the 2019/2020 academic session under my supervision.

 Student Signature / Date Supervisor Signature / Date

***DEDICATION***

I would like to thank and dedicate this report first and foremost to the Almighty God for the ability to participate throughout the course of this program.

 ***ACKNOWLEDGEMENT***

First, I really want to appreciate God for his mercy for making this program a fruitful one. He has been faithful in the journey of my life, there is no way I can honor Him enough for all He has done for me and my family.

My special appreciation goes to my family and loved ones, thank you for your tenacity of purpose and valuable contribution.

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**CHAPTER 1 – INTRODUCTION TO ENGINEERING.**

Introduction to selected subfields in the discipline such as structural engineering, construction engineering and project management, and environmental engineering. These are courses which expose students to issues related to engineering practice such as working in teams, scheduling, evaluating risk, and making ethical decisions.

Engineering is a scientific field and job that involves taking our scientific understanding of the natural world and using it to invent, design, and build things to solve problems and achieve practical goals. This can include the development of roads, bridges, cars, planes, machines, tools, processes, and computers.

An Engineer is a person who uses scientific knowledge to design, construct, and maintain engines and machines or structures such as roads, railways, and bridges. An Engineer is a person who is responsible for maintaining the engine of a ship while it is at sea. Engineers, as practitioners of engineering, are professionals who invent, design, analyze, build and test machines. Complex systems, structures, and materials to fulfill functional objectives and requirements while considering the limitations imposed by practicality, regulation, safety and cost.

There are dozens and dozens and dozens of types of engineering. Because when it comes down to the basics, engineering is about using specialized bases of knowledge to solve a problem. In broad terms, engineering can be divided into four main categories – Chemical, Civil, Electrical and Mechanical engineering.

John Smeatom, U.K. 18th century, was the first self-proclaimed, civil engineer in the 18th century and IS considered “the father of modern, civil engineering”. In the USA, engineering was recognized as a profession around the middle of the 19th century.

I chose to be an engineer because I thought it would be a lot of fun!. Engineering is the field that solves the most impactful of our problems in the world, like creating clean energy or detecting cancer. As Engineers, we are constantly changing the world with inventions and solutions that affect everyone’s lives.

Mechanical Engineering is a branch of engineering that deals with the machines and their mechanism and Mechanical Engineering is one of the oldest and broadcast branches of engineering. This field is often referred to as the ‘MOTHER’ branch of Engineering.

**CHAPTER 2 – COMPUTER ENGINEERING.**

Computer Engineering began in 1939 when John Vincent Atanasoff and Clifford Berry began developing the world’s first electronic digital computer through physics, mathematics, and electrical engineering.

While there are many different jobs within the field of computer engineering, there are several commonalities among then that make it an excellent choice for the right person. The benefits of computer engineering as a career include great pay, job security and an environment of change and innovation.

What do we do?, Computer Hardware Engineers research, design, develop, and test computer systems and components such as processors, circuit boards, memory devices, networks and routers. Acc to the U.S. Bureau of Labor Statistics (BLS).

Computer Engineering actually is engineering. All of embedded systems in electrical engineering is going to computer engineering. A lot of computer engineers work as EEs. All that’s left as core EE now is DSP, control systems, analog and digital electronics, communications, VLSI and power electronics.

5 Greatest Computer Engineers of all time;

Tim Berners Lee, Dennis Ritchie, Linus Benedict Torvalds, Donald Knuth, James Gosling.

Computer Engineering encompasses a variety of topics that relates to computation, like analysis of algorithms, programming languages, program design, software, and computer hardware. Computer Engineering has roots in electrical engineering, mathematics and Linguistics. A computer engineering degree requires numerous math courses. At minimum, students should expect three different calculus courses plus differential equations. Mathematical modelling, probability, cryptography and statistics may also be in the degree plan

**CHAPTER 3 - THE ROLE OF COMPUTER ENGINEERS.**

Computer Engineering is difficult to learn, but computer engineers are needed. Software engineering companies, telecommunications firms, designers of digital hardware, and many other companies hire computer engineering majors upon graduation and pay them well.

While computer engineers often work as programmers, most system level programs such as programming languages and operating systems are designed by computer scientists. However, computer engineers usually write the programs for computer biased systems.

Basically, computer engineering comprises of two categories which are designing of hardware and software. Hardware engineers are responsible for developing accessories and physical pieces of computers, include chips and circuits. Software engineers are genius and work on biggest projects across the world.

The average salary of computer engineer in the United States is $102,450 per year, which is 106% higher than the average U.S salary. Research found that new college graduates can earn an average salary range of $61,000 to $76,000 per year.

Computer Engineers manage and design the computer hardware and software systems of a company. These skilled individuals may specialize in hardware or software and are often referred to as programmers. Their duties include developing software systems, updating hardware and designing new equipment.

Computer engineers also perform a variety of other important tasks, from developing and improving wireless networks to allow for communication across the world, to the creation of operating systems powered by new hardware and high-level research that expands the boundaries of computer science and engineering alike.

**CHAPTER 4 - THE EXCESSES OF COMPUTER ENGINEERING.**

Being a computer engineer can be very stressful, especially when you have a deadline coming up. Debugging problems increases another level of stress to engineers delaying the timely implementation of software;

1. It requires talent
2. The field is meritocratic and competitive
3. The field evolves quickly, so you will have to keep on learning to keep up
4. There is a lot of money at stake, so there is a lot of stress and pressure to produce.
5. Everyone you know will want you to fix their computers for free

Employment of computer hardware engineers is projected to grow 6 percent from 2018 to 2028, about as fast as the average for all occupations. A limited number of engineers will be needed to meet the demand for new computer hardware because more technological innovation takes place with software than with hardware.

Excesses include; Virus and hacking attacks, Online Cyber Crimes, Cyber-Stalking, Reduction in employment opportunity amongst others.

Using computers can make you physically weak and lazy, also doing extra unwanted activities on computers can waste your time. By using computers for a long time, your blood circulation can become poor due to less physical activities. It can cause disturbance in one’s meal, Can cause health problems like bad postures, aches, obesity, eye problems e.t.c. Also, it has a bad effect on education if it is used unproperly.

Other cons;

1. While another computer is making people smart, another one is making more ill use of it.
2. More use of computer an mobile is proving to be harmful to health
3. More frequent damage to the eyes is due to continuous viewing on mobile and computer screen.
4. People have stopped meeting, more people like to chat on social networking sites like Facebook, Twitter and Whatsapp than anyone visiting their home, even 4 people living in a house from their mobile phones only stick.
5. In large companies and factories, many laborers have started working on computers and robots, which has also increased unemployment.
6. If you do not use internet banking carefully, there is a risk of your personal data being stolen, which causes many users to suffer financial loss.
7. Similarly, on the social networking site, even if not working carefully.
8. Cheating through the internet has increased in a big way.

**CHAPTER 5 – THE PROFFESIONS ATTAINABLE VIA COMPUTER ENGINEERING.**

Besides the computer engineers have plenty of options to work in IT companies in departments such as design, development, assembly, manufacture and maintenance. Working as a programmer, web developer, and e-commerce specialist with telecommunications companies, automotive companies, aerospace companies.

Career in IT is considered one of the most high-paying jobs and is full of opportunities; particularly when India’s prowess in information technology industry is recognized across the globe. The pool of talented computer engineers working in IT companies of the USA and Canada shows that IT can take a person to higher levels.

1. Software Developers: Software developers are professionals who are concerned with facets of the software development process which involves activities such as design and coding, computer programming, project management, e.t.c.
2. Hardware Engineers: These professionals do research, design, develop, test, and oversee the installation of computer hardware which inter alia includes computer chips, circuit boards, systems, modems, keyboards, and printers.
3. System Designer: Professionals involved in system designing, Logical and Physical Designing wherein logical designing can be enumerated as the structure and characteristics such as output, input, files, databases and procedures, e.t.c
4. System Analyst: Computer engineers who work as system analyst do research about the existing problems and plan solutions for the problem. They also recommend software and system related problems and coordinate development between business and development teams.
5. Networking Engineers: Networking engineers are computer professionals involved in designing, implementation, and troubleshooting of computer networks.
6. DBA: DBA or Database Administrator are the professionals who are bestowed with the job to design, implement, maintain, and repair an organization’s database.

*TOP COMPANIES;*

1. Google
2. Yahoo
3. Hewlett-Packard
4. International Business Machines Corporation
5. Toshiba Corporation
6. Dell Inc
7. NEC Corporation
8. Canon Inc
9. Apple Inc

**CHAPTER 6 – THE ROLE OF COMPUTER ENGINEERS IN THE ECONOMIC GROWTH, INDUSTRIALIZATION AND SUSTAINABLE DEVELOPMENT GOALS.**

Engineers have to realize their responsibility and play an effective role in tackling today’s complex issues in the nation building. Thus, they are duty bond to design products, machineries and plants to manufacture these products, and systems to ensure quality and efficiency. Engineering plays a key role in supporting the growth and development of a country’s economy as well as in improving the quality of life for citizens, As such, there is an important link between a city`s engineering capacity and its economic development.

Engineers can play an important role in sustainable development by planning and building projects that preserve natural resources, are cost-efficient and support human and natural environments. A closed-loop human ecosystem can be used to illustrate the many activities of engineers that support sustainable development.

The role of an engineer is to tackle some of the world’s biggest problems; helping to save lives and create fantastic new technological advancements that can improve the way we live. Engineers use device like drones to detect and reach survivors, help to build shelters and safe water and waste disposal systems.

Engineers have the skills to turn products of imagination into real-world innovation. As humanity`s knowledge and need increases, the demand for engineering grows as well. This means the future will be full of new opportunities for engineers. Inventing tools and technology for the betterment of humanity is a special task.

**Conclusion**

Computers are used in every single field of life at the largest and smallest scale. They are used in homes, business, educational institutions, research organizations, and government offices. They are used for a variety of purposes following are some examples of uses of computers: Homes, Education, Manufacturing, Industry, Technology, Entertainment, Government, Business, keeping payroll records, printing pay checks, billing customers, preparing tax returns, marketing and stock exchange and in all aspects of human endeavors.