Abstract—A computer is an electronic device that accepts, stores, and processes the data and returns the result as output. Personal computer (PC) has become an integral part of everyday life. It gives us access to sources of knowledge. Personal computing is part of the total computing activity of businesses. The PC has come of age with many software packages available for users at affordable prices. This paper provides a primer on personal computing.

Keywords—personal computing, universal personal computing, ubiquitous computing

I. INTRODUCTION

After the telephone, the personal computer (PC) is one of the greatest human inventions. Computers have become an indispensable part of our lives at home, at work, at leisure, and in many other activities.

A personal computer (PC) is a multi-purpose computer whose size, capabilities, and price make it possible for individual use, as opposed to a mainframe computer. "PC" is often used in contrast with "Mac", an Apple Macintosh computer, although Mac can also be regarded as PC. A PC is based on the microprocessor technology which enables manufacturers to put an entire CPU on one chip. It is designed for only one person to use at a time. Software for PCs is typically obtained independently from the operating system manufacturers. A PC usually comes with the processor, monitor, disk drives, keyboard, and mouse. Figure 1 shows some typical devices connected to a PC [1]. A recent development is the all-in-one computer (or single-unit PCs) that combines the monitor and processor within a single unit [2].

Early personal computers were generally called microcomputers. The first PC was put on the market in 1975. The mass-marketing of PC began in 1977. After the development of the microprocessor, PCs were so reduced in size and cost that they eventually became affordable consumer goods. Over one billion PCs has been sold worldwide since mid-1970s. Mature markets like the United States, Western Europe, and Japan account for 58 percent of the worldwide installed PCs [3].

II. CONCEPT OF PERSONAL COMPUTING

Personal computing refers to people manipulating data on PCs to increase their productivity. A personal computing environment consists of a set of components that include processors, storage devices, networking support, and peripheral device such as keyboard, display, printer, camera, etc. Since personal computing involves individual users, it is usually
defined by their computing environment, mainly home and work. As a technology, personal computer consists of two major components: hardware and software. Hardware is the physical equipment, while software includes the operating system and programs:

- **Hardware:** This refers to all the electronic and mechanical equipment in a PC. It consists of the case, a microprocessor, random access memory (RAM), read only memory (ROM), arithmetic logical units (ALU), control unit; input/output devices (like monitors, mouse, touch screen, keyboard), cables, printer, scanners, speakers, cameras, and power supply [4]. The operating system and software are installed in the hardware to perform various functions.

- **Software:** These are the programs that control the operation of the PC. There are two types of software: system and application. System software is usually built into a computer, whereas application software is sold separately. System software consists of a set of programs that manage computer resources and operations. Application software assists users in performing many different tasks such as word processing, budgeting, forecasting, and preparing taxes [4].

Today we have several emerging technologies that can be integrated with standard PCs. These include PDAs, smartphones, and wireless devices.

### III. APPLICATIONS

A PC can be used at home, at work, in classroom or laboratory. A computer user at home uses application software to carry out a specific task such as word processing, spreadsheets, media players, gaming, online banking, ecommerce/shopping, school homework, and Internet access. Home computing is probably the fastest-growing usages of PCs. It allows PC to be used for personal and family tasks.

Businesses use PCs for word processing, accounting, desktop publishing, spreadsheet, information-processing and database management. Employees also use PCs to make presentations, send emails, create databases, and conduct research on the Internet. Scientists use the PC for scientific applications such as weather forecasts, research, and chemical analysis.

### IV. BENEFITS AND CHALLENGES

Personal computing can produce increase in productivity. It is an effective technology to aid thinking and communication. PCs have allowed smaller enterprises to achieve some automation.

Personal computing users are often system administrators for their PC. Most are amateurs without formal training and they typically need to consult with others to resolve difficulties. Users have no choice but to trust an unmanaged PC that they encounter. The PC has served as a catalyst for cultural change and mediates much social interaction. The PC has done amazingly well in business. The original vision of Microsoft, "a computer on every desk and every home," has come to reality [5]. PCs help users perform their work better than without the PCs. Nearly all disciples have been revolutionized by the power of personal computers.

The challenge of using PCs comes when it is used within an organizational context. Many employees are gaining access to work systems using a variety of devices which are contending with traditional PC. The nature of the training currently provided to personal computer users is technical and limited in scope. Computer software is copied by some users because of its very nature, and because users can perform such unethical action unobserved and undetected. Employees feel no harm is done by using the system for non-work tasks. Majority of students regard copying as acceptable behavior [6].

### V. CONCLUSION

A computer is an electronic machine that is designed to process data or perform calculations according to a specified set of instructions. Personal computing is the use of computing resources by an individual user to perform some tasks. Mobile devices like tablets and smartphones are part of the PC strategy today. Some suggest that we are now in post-PC era, where personal computing is being replaced by ubiquitous computing and networking [7]. More information on personal computing can be found in books in [8-13].

### REFERENCES

ABOUT THE AUTHORS

Matthew N.O. Sadiku (sadiku@ieee.org) is a professor at Prairie View A&M University, Texas. He is the author of several books and papers. He is a fellow of IEEE.

Mahamadou Tembely (matembely@pvamu.edu) received his doctoral degree from Prairie View A&M University, Texas. He received the 2014 Outstanding MS Graduated Student award for the department of electrical and computer engineering. He is the author of several papers.

Sarhan M. Musa (smmusa@pvamu.edu) is an associate professor in the Department of Engineering Technology at Prairie View A&M University, Texas. He has been the director of Prairie View Networking Academy, Texas, since 2004. He is an LTD Sprint and Boeing Welliver Fellow.