Chapter-1

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CHAPTER Introduction to Computer On completion of this chapter , the students will be able to : tell the definition and characteristics of computer . indicate the modern application field of computer . mention the impact of computer different application fields . describe the importance and limitation of computer , list the types of computer on different basis and their application fields . Introduction Almost a century ago , a large number of inventions took place during the first industrial revolution . Within a short span of time , many countries were industrialized . Now , we are in the beginning of another industrial revolution . The major cause of the second industrial revolution is the invention of computers . Computer is the most versatile machine humans have that ever created . It plays an important role in our everyday life . It covers a huge area of applications including education , industries , government , medicine , and scientific research , law and even music and arts . Without computers , life would certainly be difficult and different . It also helps to boost up the economy of country . Computer is defined as an electronic device designed to accept data (input) , perform the prescribed mathematical and logical operations at high speed (processing) , and supply the results of these operations (output) . Characteristics of Computer Today , computers are found everywhere in offices , homes , schools and other many more places . Most of the world uses computers , and computers have changed our lives . Some of the characteristics of computers , which make them the most essential part of every emerging technology , are listed below : Introduction to Computer I

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3 . Speed Computers work at a tremendous speed . They process data at an extremely fast rate . A computer can execute millions of instructions per second over and over again without any mistakes . At present a powerful computer can perform billions of operations in just a second . Milli second A thousandth of a second (1 / 1,000) Micro second A millionth of a second (1 / 1,000,000) Nano second A billionth of a second (1 / 1,000,000,000) Pico second A trillionth of a second (171,000,000,000,000) b . Accuracy Computers are very accurate . The level of accuracy depends on the instructions and the type of machines being used . Computers are capable of doing only what they are instructed to do . Inaccurate instructions for processing lead to inaccurate results . This is known as GIGO (Garbage In Garbage Out) . Errors may occur in the results due to human factors rather than technological weaknesses . Automatic Computers are automatic machines . Once a program is in the memory of a computer , no human intervention is needed ; it follows the instructions step by step executes them and terminates the execution when it receives the command to do so . d . Storage Capacity Computers have got a main memory and the secondary storage systems . The main memory of the computer is relatively small and it can hold only a certain amount of information . Therefore , the larger amount of data and information is stored in the secondary storage media such as magnetic disk and optical disk . Computers can also retrieve the information instantly when desired . Diligence e Computer , being a machine , does not suffer from the human problems of tiredness and lack of concentration . It can continuously work for hours without making mistakes . Even if millions of calculations are to be performed , it will perform the last calculation with the same accuracy and speed as it has done the first one , Limitations of Computer Computers have certain limitations too . As a machine , a computer can only perform what it is programmed to do . Computers lack decision - making power . Computers cannot decide on their own . If an unanticipated situation arises , computers will either produce erroneous results or abandon the task altogether . They do not have the potential to work out an alternative solution . 2 I Modern Computer Science - 9

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ST n of Importance and Modern Application Areas of Computer Computers are the most versatile tools humans have ever created . Nowadays .. computers are being used almost in every sphere of our life . In the past computer was used only for scientific and engineering computational work . But

nowadays , computers are extensively used for different works such as storing information , transmitting information , creating and handling files in offices , controlling industrial machines and processing , controlling business and commercial appliances . ticket reservation in airlines and railways , diagnosing diseases , recording game events , composition of music , painting , book printing , printing newspapers , preparing drawings , in security management to watch and supervise certain areas to help the police in crime . investigation and in education . Some of the major applications where computers are being used are listed below . Science Scientists use computers develop theories , collect , analyze and test the data , and exchange information electronically with colleagues around the world . Powerful computers can be used to generate detailed studies of how earthquakes affect buildings or how pollution affects weather pattern Satellite - based science applications have not been possible without the use of computers . Computers are being used for research space . They are also used to make different types of investigation in medical science to find out diseases and medicines for the respective disease . lo Education Nowadays , mostly all schools . colleges , and universities are giving more emphasis to the computer._.education including it in their curriculum . In these institutions in addition to giving solely computer education , computers have become essential for teaching other subjects as well . Classrooms and libraries ac efficiently utilizing.computers to make the education much more interesting . Unlike recorded television shows , Computer Aided Education (CAE) and Computer Based Training (CBT) packages are making learning much more interactive , Introduction to Computer 3

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Communication Electronic mail (E - mail) is a facility supported by computers to send messages from one place to another E - mail facilitates sending the messages from one person to different persons by the aid of computer and Internet . Here each person / user has a mail box which is accessed via terminals or workstations within the system by entering an account number and a password . Email is a faster and cheaper means of communication . Engineering and manufacturing The architects and engineers are extensively using computers in designing and drawing . Computers can create objects that can be viewed from all the three dimensions . By using the techniques like virtual reality . architects can explore houses that have been designed but not built . Automobile , aircraft , aerospace and ship designers use Computer Aided Designing (CAD) technique in the design of various types of vehicles , The manufacturing factories are using computerized robot to perform risky jobs . Besides . Computer Aided Manufacturing (CAM) can be used in designing and planning the product Designing Aeroplane Banking In the field of banking and finance , computers are extensively used . People can use the ATM (Automated Teller Machine) services twenty - four hours of the day in order to deposit and withdraw cash . When the different branches of a bank are connected through the computer networks then the inter branch transaction can be done by the computers without any delay .. Business and industries small Many of today's successful companies simply would not exist without computer technology . Each year , hundreds of thousands of individuals launch their business based at their homes or small - office locations . They depend on computers and software for not only to perform basic work functions , but to manage and grow their companies . These tools enable business owners to handle tasks such as daily accounting , inventory 4 Modern Computer Science - 9

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management , marketing , payroll , and many others . Businesses are also using the networking of computers , where a number of computers are connected together to share the data and information . Use of E - mail and Internet has changed the ways of being used business . Nowadays , computers are used to design the product , ship and process control in the industries . As a result , small business and industries become most self sufficient , competitive and reduce their operating expenses . * The Social Impact of Computer From the time of the invention of the computers to the

present day , computers have met tremendous changes . Time to time incorporation of the latest technical achievement has made the use of computers easier . More and more applications have been developed and almost all the areas of the professions have been computerized . Computerization is continuously Computer in Business and Trading becoming an important part of many organizations . Computers have proved themselves in almost all the fields whether related to numeric processing or non - numeric processing or document processing in the developed countries and all the walks of life . Computers have become the part of every organization . But in developing countries like Nepal , computers are facing an opposition . Types of Computers There are many types of computers in use today . Computers are broadly divided into three groups on the basis of computing techniques used . They are : Analog computers Analog computers are computers . that measure physical quantities such as pressure and temperature and convert . them to numeric values . They are special purpose machines , which perform a particutar task and are mainly used for scientific and engineering purposes . The main characteristics of these computers are that they are very fast in operation as all the calculations are done in the parallel mode . They give approximate results since they deal with quantities that vary continuously . The examples of analog devices are thermometer , speedometer of car , etc. Introduction to Computer 5

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Digital computers Digital computers are the most popular computers . They work with digits and also represent numerals , letters , or other special symbols . These computers use binary codes . Os and Is , to represent the information . The information is given to the computer in the form of electrical signals . Digital computers can be classified on the basis of their size and capability as discussed below : b . Super computers Super computers are the largest , fastest and the most expensive computers . They have a large memory capacity and very high processing speeds for solving scientific and engineering problems . A. super computer contains a number of CPUs , which operate in parallel to make it faster . They are used for massive data processing and solving very sophisticated problems . They are used in meteorology , astronomy , automobile design , aircraft design , designing of robots , nuclear physics and oil exploration . Examples of super computer are CRAY - XMP and NEC - 500 . Mainframe computers Mainframe computers are powerful and largest general purpose computers made for high volume , processor - intensive computing . They consist of a high end computer processor , with related peripheral devices , capable of supporting large volumes of data processing , high - performance on line transaction processing systems . and extensive data storage and retrieval . Mainframe allows its user to maintain large information storage at a centralized location which can be accessed and processed from different computers located at different locations . They are typically IBM 4381 and ICL 39 series . used in large business and for scientific purpose . Examples of mainframe computers are NO 6 I Modern Computer Science - 9

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CONVERSE Mini computers Mini computers are designed to meet the computing needs for several people simultaneously in a small to medium - size business environment . They are capable of supporting simultaneous users . Mini computers are used for multi - users and interactive applications_in industries , research organizations and universities . They are also used for real - time controls and engineering design work . High - performance workstations with graphics 1/0 capability use mini computers . Examples of mini computers are IBM 9375 and Motorola 68040 . d . Micro computers A micro computer is the smallest of the computer family . It consists of the microprocessor as its CPU . It is cheap , compact and can be easily accommodated on a study table . Micro computers are used as home computers for small business as well . IBM , Hewlett Packard , Apple , Compaq are some well - known companies which manufacture micro computers .

IBM PC and Apple Macintosh are the examples of microcomputers . Microcomputers include desktop , laptop and hand - held models . (1) Desktop A desktop computer is the most common micro computer . It is designed to be used by one person at a time . It typically consists of a system unit , a monitor , a keyboard internal hard disk storage , and other peripheral devices . They are not very expensive to purchase by people or small business organizations . (ii) Laptop A laptop provides the mobile computing technology . It is battery - operated and hence can be used anytime and anywhere . It is small enough to fit on the lap of the user . It is equipped with powerful microprocessors , graphic capabilities , adequate memory and a touch pad . (iii) Hand - held Computer A hand - held computer is 2 computer that can conveniently fit on the palm . So , it is also known as a palmtop computer . A stylus , which may contain special electronic circuitry , is used to write on the computer display . It has small cards to store programs and data . It can be connected to printer or a disk drive to generate output or store data . It has a limited memory and is less powerful as compared to desktop computers . Introduction to Computer 7

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Hybrid computer The features of analog and digital machines are combined to create a hybrid computing system . They are special purpose computers . These machines are generally used for scientific applications and controlling the industrial processes . A simple example of a hybrid computer Is the computer used in hospitals to measure the heartbeat of the patients . Points to Review - Computer is an electronic device designed to accept data (input) , perform the prescribed mathematical and logical operations at high speed (processing) , and supply the results of these operations (output) . - Computers are the most versatile tools humans has ever created . Scientists have been using computers to develop theories , analyze them , and test the data . Computer Aided Education (CAE) and Computer Based Training (CBT) packages are making learning much more interactive . - Electronic Mail (E - mail) is one of the communication media in which computer is used . The architects and engineers are extensively using computers in designing and drawing - Computers are broadly divided into three groups on the basis of computing techniques used . They are analog , digital and hybrid computers . Terms to Know Analog device ATM CAM Computer a device that works by measuring voltage and currents a machine used in banks , which allows a customer to deposit or withdraw cash by the use of an electronic card without the need to interact with a bank employee use of computers to automate manufacturing operations an electronic device , which can automatically accept and store input data , process them , and produce output results by interpreting and executing the programmed instructions a network of networks of computers , which links many different types of computers all over the world a service on the Internet , which allows an Internet user to send a mail to another Internet user in any part of the world Internet E - mail 8 / Modern Computer Science - 9

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1 . ch - 1 Exercises Fill in the blanks : Computer is capable of doing only what it is instructed to do . Inaccurate instructions for processing lead to inaccurate results . This is known GIGO b . super computers are most and expensive computers . c . Micro computer is the smallest of the computer family . di computer Aidedamentelor in China designing and planning the US powe e . IT stands for Information Technology f . Computer Aided Education is very useful in learning interactively . 2 . a . 3 . State whether the following statements are True or False : A computer is capable of doing only what it is instructed to do ; inaccurate instructions for processing lead to inaccurate results . TRUE b . Computers are used in business to make different types of investigation in medical science to find out diseases and medicines for the respective disease.FALSE C. Computer aided learning makes learning interactive TRUE d . Computers have created new fields of employment . These employments are in the field of designing , manufacturing , teaching , etc. TRUE e . You should use a computer to harm others . FALJE f . Computer technology has become essential to boost up the economy of any country . TRUE g . A hand - held computer is a computer that can conveniently fit on the palm.TRUE Give the full forms of the following abbreviations : a . GIGO b . CAE c . CBT d .

ATM c . CAM f . CAD Name the technical term for each of the following statements : Computer works with digits and also represents numerals , letters , or other special symbols . Digital Computer b . The combination features of analog and digital machines . Hybrid computer Packages that makes learning much more interactive . CAE and CBT d . network of networks of computers , which links many different types of computers all over the world . Internet The computer that measures physical quantities such as pressure and temperature and converts them to numeric values . Analog computer The smallest of the computer family that consists of a microprocessor as its CPU . micro computer a . c . e . f . Introduction to Computer 9

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5 . C 6 . 2 . Select the best answer for the following : Computer can not a . i . do calculations ii store data ili take a decision iv , all of them . b . Computer cannot i . process data ii . save data i think itself iv . analyse data Slide rule was developed by i . Blaise Pascal ii . John Napier ii . William Oughtred iv . Charles Babbage d . ENIAC was developed in i . First generation ii . Second generation 111. Third generation iv Fourth Generation er . The computer that works measuring physical quantities i Analog ii . Digital iii . Hybrid iv . None Answer the following questions : What is a computer ? List any three important characteristics of a computer . b . What do you understand by the term " GIGO " ? c . What are the limitations of a computer ? d . Explain the uses computers in education and communication e List any three beneficial and harmful effects of computer in our society . f . Define e - mail . Write any two advantages of it . g . What is an analog computer ? Give any two examples of analog devices . h . What is a digital computer ? Classify the digital computers on the basis of size . What is a super computer ? Where is it used ? j X. Describe the advantages of using a mini computer over a microcomputer . KX What are the different models of microcomputers ? Explain one of them in short . me What is a hybrid computer ? Write short notes on : Computer Based Training b . Computer Based Education Social Impact of computer d . Laptop Computer 7 . C. 10 Modern Computer Science -9

THE END