Computer systems consict of hardware and software. The hardware is the physical machine. A set of instructions for the computer to carry out is called a program All the different kinds of programs used to give instructions to the computer are collectively referred to as software.

CPU( carry out only simple instructions), memory(holds data for the computer to process);

Main memory: holds the current program and much of the data that the program is manipulating; it disappears when you shut down the computer;

Auxiliary memory : exists even when the computer’s power is off;

RAM: random access memory 16GB Ram; is the main memory;

1TB disk ; SSD;

A byte contains 8 digits ; Each of which is either 0 or 1( a bit); Binary digit;

Auxiliary memory is divided into bytes, these bytes are grouped into much larger units known as files;

A file is a group of bytes stored in auxiliary;

A directory or folder contains groups of files;

A program is a set of computer instructions;

Programming languages are designed to be easy for people to understand and use; Before a program written in a high-level language can be run, it must be translated into a language that the computer can understand;

Assembly language;

Java Bytecode:

The java compiler does not translate your program into the machine language for your particular computer; Instead, it translates your Java program into a language called bytecode;

Bytecode is a machine language for a hypothetical computer known as a virtual machine;

The program that does this translation is a kind of interpreter called the Java Virtual Machine, or JVM;

One java compiler works on every computer;

A java program is seldom written as one piece of code all in one file. Instead, it typically consists of different pieces, known as classes;

Applets run within a web browser;

System.out.println(“hello there”)

A java program uses objects to perform actions that are defined by methods; An object performs an action when you invoke ,or call one of its method;

Use javac to compile and use java to execute;

OOP: An object has characteristics or attributes; State &Behaviors( methods) ; All objects of a class have the same attributes and behaviors; A class defines a type or kind of object. The actions performed by objects are defined by methods

Object oriented programming：

Encapsulation, Polymorphism, Inheritance;

Encapsulation is like putting things into a capsule or packaging things up; Only part of what is in the capsule is visible; Encapsulation hides the fine detail of what is inside the “ capsule”

Polymorphism: allows the same program instruction to mean different things in different contexts. Polymorphism enables objects to behave appropriately;

Inheritance is a way of organizing classes; Inheritance enables the programmer to avoid the repition of programming instructions for each class;

Object-oriented programming is a programming methodology that defines objects whose behaviors and interactions accomplish a given task.

An algorithm is a set of directions for solving a problem.

Testing and debugging;

A mistake in a program is called a bug; The process of eliminating mistakes in your program is called debugging. : syntax errors, run-time errors and logic errors; you must follow very strict grammatical rules when you write a program.

Typical software is not produced from scratch, Most programs contain some components that already exist;

Java Application Programming Interface;