1.a primitive variable's information is stored as the value of that variable whereas reference variables hold a reference to information related to that variable

2.scope of variable is defined as its range in the program under which it can be accessed. local variablevariables that are declared within a function. global variables-variables that ae declared outside a function.

3.variables that are not initialized does not have a defined value, hence it can’t be used until it is assigned a value. To prevent bugs

4.static variable-defined outside a method at the class level is accessible throughout the class. instance variable- defined outside a method at the class level is accessible throughout the class and doesn’t require keyword

local variable-defined within a method and is only accessible in the method where is declared

5.narrowing refers to passing a higher size data type to a lower size data type widening refers to converting a lower datatype to a higher datatype

6

|  |  |  |  |
| --- | --- | --- | --- |
| **TYPE** | **SIZE (IN BYTES)** | **DEFAULT** | **RANGE** |
| boolean | 1 bit | false | true, false |
| Char | 2 | ‘\0000’ | ‘\0000’ to ‘\ffff’ |
| Byte |  | 0 | -27 to +27-1 |
| Short |  | 0 | -215 to +215-1 |
| Int | 4 | 0 | -231 to +231-1 |
| Long |  | 0L | - -263 |
| Float | 4 | 00.0f | 3.4E-38 to 3.4E+38 |
| Double | 8 | 0.0d | -1.8E+308 to +1.8E+308 |

7.java package is used to categorize the classes and interfaces so that they can be easily maintained. java package provides access protection java package removes naming collision

8.graphical components that makes up the GUI. Listener methods that receive the events and respond to them. Application method that do useful work for the user.

9.component class represent visual elements of a Graphical User Interface. Container is a component that can contain other components

10.java program to reverse an array

Import java.util.Arrays;

Public class Arrays

{ Public static void main(String[] args)

{ Int [] my\_array={ 1, 2, 3, 4, 5 }

System.out.println(“original array : ” + Arrays.toString(my\_array));

For (int I = 0; I < my\_array.length / 2; i++)

{ Int temp = my\_array[i];

My\_array [i] = my\_array [my\_array.length –i- 1 ];

my\_array [my\_array.length –i- 1 ] = temp; }

System.out.println(“reverse array : ” + Arrays.toString(my\_array));

} }

11.event-is defined as the changing state of an object performing actions.

12. Polymorphism and encapsulation Polymorphism ensures that the proper method will be executed based on the calling object’s type.

Encapsulation allows you to control access to your object’s state

ii) Method overloading and method overriding occurs when the method signature is the same in the superclass and the child class while Overloading occurs when two or more methods in the same class have the same name but different parameters.

iii) Class and interface Difference between an interface and an abstract class is that an interface cannot have state, whereas the abstract class can have state with instance variables.

iv) Inheritance and polymorphism means "many forms", and it occurs when we have many classes that are related to each other by inheritance. Inheritance lets us inherit attributes and methods from another class.

Polymorphism uses those methods to perform different tasks.

13.code implanting polymorphism

1. **class** Bike{
2. **void** run(){System.out.println("running");}
3. }
4. **class** Splendor **extends** Bike{
5. **void** run(){System.out.println("running safely with 60km");}
7. **public** **static** **void** main(String args[]){
8. Bike b = **new** Splendor();//upcasting
9. b.run();
10. }
11. }

A. mutable value is one that can be changed without creating an entirely new value. In JavaScript, objects and arrays are mutable by default, but primitive values are not — once a primitive value is created, it cannot be changed, although the variable that holds it may be reassigned.

b. Immutable classes means that once an object is created, we cannot change its content. In Java, all the wrapper classes (like Integer, Boolean, Byte, Short) and String class is immutable.

2. A string buffer is like a String, but can be modified. At any point in time it contains some particular sequence of characters, but the length and content of the sequence can be changed through certain method calls. String buffers are safe for use by multiple threads

2b.the code output is –error

Because the code has no public class