Java Programs

Revision

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Part 1: Multiple Choice

1- Which data type is used to store decimal numbers?

A) int.
B) double.
C) char.
D) Boolean.

2- Which symbol is used for comments in Java?

A) //
B) ##
C) **
D) @@

3- Which operator is used for comparison?

A) =
B) ==
C) !=
D) Both B and C

Part 1: Multiple Choice

4- Which object used for user input in Java?

A) Scanf.
B) Scanner.
C) Cin.
D) Input.

5- Which loop is guaranteed to execute at least once?

A) Do-while
B) for
C) while
D) Switch

6- What is correct an array definition?

A) **int** arr[6];
B) **int** [6] arr;
C) **int**[] arr = **new** **int**[size];
D) Both B and C

Part 1: Multiple Choice

7- Which of the following is used to create an object?

A) class.
B) new.
C) static.
D) void.

8- What is an **object**?

A) An instance of a class
B) function
C) A loop
D) A Condition

9- Method Overloading is ?

A) Run-time Polymorphism
B) Regular method;
C) Static Method;
D) Compile- time Polymorphism

Part 2: True/False

1- Java is case-sensitive.	**True**
2- = is used for comparison	**False (it is assignment)**
3- switch can replace multiple if statements.	**True**
4- Array index starts from 1.	**False (starts from 0)**
5- break stops the loop	**True**
6- Methods must always return a value.	**False (void exists)**
7- An object is an instance of a class.	**True**
8- Encapsulation hides data.	**True**
9- Abstract class can be instantiated.	**False**
10- Overriding is Runtime Polymorphism	**True**

Part3: Predict Code Output (1)

```
int[] arr = {1,2,3};

for(int x : arr)
x = x * 2;

for(int x : arr)
System.out.print(x);
```

Output

123

Predict Code Output (2)

```
for(int i=0;i<3;i++);
System.out.println("Hello");
```

Output

Hello

Predict Code Output (3)

```
int[] arr = {1,2,3};

for(int i=0;i<arr.length;i++)
arr[i] += i;

for(int x : arr)
System.out.print(x + " ");
```

Output

1 3 5

Predict Code Output (3)

```
int x = 5;

if (x > 10 && ++x > 5)
System.out.println(x);

System.out.println(x);
```

Output

5

Predict Code Output (4)

```
int x = 2;

switch(x){
case 1:
System.out.print("A");
case 2:
System.out.print("B");
case 3:
System.out.print("C");
}
```

Output

BC

Predict Code Output (5)

```
int[][] arr = {
{1,2},
{3,4,5}
};

System.out.println(arr[1][2]);
```

Output

5

Predict Code Output (6)

```
class A {
    void show() {
        System.out.println("A");
    }
}

class B extends A {
    @Override
    void show() {
        System.out.println("B");
    }
}

public class Test {
    public static void main(String[] args) {
        B obj = new B();
        obj.show();
    }
}
```

Output

B

Predict Code Output (7)

```
class A {
    void show() {
        System.out.println("A");
    }
}

class B extends A {
    void display() {
        System.out.println("B");
    }
}

public class Test {
    public static void main(String[] args) {
        B obj = new B();
        obj.show();
    }
}
```

Output

A

Predict Code Output (8)

```
class A {
    void show(int x) {
        System.out.println("A");
    }
}

class B extends A {
    void show(double x) {
        System.out.println("B");
    }
}

public class Test {
    public static void main(String[] args) {
        B obj = new B();
        obj.show(5);
    }
}
```

Output

A

This is **overloading, not overriding**.
Method selection happens at **compile time**

Part4: Write Java Program (1)

- Write java program that:
  1. Take integer number from user.
  2. Generate multiplication table for this number
  3. Example: 5*1=5
     5*2=10
     5*3=15
     :

1. Create class called *"MultiplicationTable"*.
2. Add Main function on this Class.
3. What are the variables I need to declare.
4. I need input from user so I will use Scanner object.
5. I need to Multiply user number on numbers from 1 to 10 so I need loops

Multiplication Table

```
import java.util.Scanner;
public class MultiplicationTable {

        public static void main(String[] args) {
                int num = 0;
               Scanner myObj = new Scanner( System.in);
               System.out.println("Enter The Number");

                num= myObj. nextInt();

                for(int i = 1; i <= 10; i++)
                {
                     System.out.printf("%d * %d = %d \n", num, i, num * i);
                     //System.out.println(num+"*"+ i +"="+num*i);
                }
        }


}
```

Part4: Write Java Program (2)

- Write java program that:
  1. Take char from user.
  2. Print AsciiValue

1. Create class called “*AsciiValue*”.
2. Add Main function on this Class
3. What are the variables I need to declare.
4. I need input from user so I will use Scanner object.
5. I need to cast **char** to get **int** vale.
6. Print Output.

AsciiValue

```
import java.util.Scanner;
public class AsciiValue {

        public static void main(String[] args) {
                String input=“ ”;
                char ch =‘ ’;
                int castAscii=0;

                Scanner myObj = new Scanner( System.in);
                System.out.println("Enter character");
                 input= myObj. next();
                 ch = input.charAt(0);

                 castAscii= (int) ch;
                 System.out.println("The ASCII value of " + ch + " is: " + castAscii);

        }
}
```

Part4: Write Java Program (3)

- Write java program that:
  1. Solve Algebra Equation ax+b=0 .
  2. Take a ,and b from user
  3. Print x value

1. Create class called “*Algebra*”.
2. Add Main function on this Class
3. What are the variables I need to declare.
4. I need input from user so I will use Scanner object.
5. Solve equation ax+b=0 to x=-b/a.
6. Print value of x.

Algebra Equation

```
import java.util.Scanner;
public class Algebra {

        public static void main(String[] args) {
                double x,a,b=0.0;

                 Scanner myObj = new Scanner( System.in);
                 System.out.println("Enter Equation parameters a, and b");

                 a=myObj.nextDouble();
                 b=myObj.nextDouble();

                 x=-b/a;
                 System.out.println("x =  " + x);
         }
}
```

Part4: Write Java Program (4)

- Write java program that:
  1. check whether a number is prime or not.
  2. Take an input from user
  3. Print number is prime or Not

Note:

A **prime number** is a natural number **greater than 1** that has **only two factors (divisors)**:

- **1**
- **The number itself**

- **Examples of Prime Numbers**
  - **2**
  - **3**
  - **5**
  - **7**
  - **11**
  - **13**

1. Create class called “*PrimeNumer*”.
2. Add Main function on this Class
3. What are the variables I need to declare.
4. I need input from user so I will use Scanner object.
5. Start Search from **2** up to **num – 1**
6. If the number is divisible by any value → **not prime**.
7. If no divisor is found → **prime number**.

Prime Number

```
import java.util.Scanner;
public class Largeest {
        public static void main(String[] args) {
                int num=0;
                boolean isPrime=true;
                 Scanner myObj = new Scanner( System.in);
                 System.out.println("Enter The Number");
                 num=myObj.nextInt();
                 for(int i=2;i<num;i++){
                     if(num % i == 0){
                         isPrime = false;
                         break;
                     }
                 }
                if(isPrime)
                   System.out.println("Prime");
               else
                 System.out.println("Not Prime");

         }
}
```

Part4: Write Java Program (5)

- Write java program that:
  1. Create Function return the largest Element on array .
  2. Take array size and the elements from user.
  3. Return large number

1. Create class called “LargestElement”.
2. Add Main function on this Class
3. What are the variables I need to declare.
4. I need input from user so I will use Scanner object.
5. Declare array according to the input size
6. Loop to take element by element from user.
7. Create function Called Large take array as a parameter and return the large element on array.
8. Print value at the end of the main.

```java
import java.util.Scanner;
public class LargestElement {
        public static void main(String[] args) {
                int max=0;
                int size=0;
                 Scanner myObj = new Scanner( System.in);
                 System.out.println(" Enter the number of elements ");
                 size=myObj.nextInt();
                 int[] arr = new int[size];
                 System.out.println ("Enter " +size +" elements");
               for(int i=0;i<size;i++) {
                     arr[i]=myObj.nextInt();
                }
                max=larg(arr);
               System.out.println("The max Element is "+max);
         }
        public static int larg(int [] arr) {
                  int max = arr[0];
                  for(int i=1;i<arr.length;i++){
                       if(arr[i] > max)
                           max = arr[i];
                  }
                 return max;
        }
}
```

Thanks

References: https://www.w3schools.com