# MID-TERM

**(CLO\_1): (Cognitive Level C2, GA\_1, i.e., Basic Problem Solving)**

Q1. Differentiate between constants and variables?

**Answer:**

**Variables:**

A variable is an object that holds data, and its value can change as the program is executed. Flexibility is essential for the storage and use of information and enables developers to create dynamic and functional applications. A variable must be declared with a specific data type, such as int, double, or String before it can be used. The data type specifies the values that a variable can store.

**Constants:**

Unlike variables, constants in Java represent values that do not change during program execution. They provide a means to define standardized values that are consistent throughout the life of the program. Constants are often used to store values that are easily changed, such as mathematical constants or configuration parameters.

**(CLO\_2): (Cognitive Level C3, GA\_2, i.e., Apply basic programing Concepts)**

Q2. Write a program to calculate x raised to the power y, where x and y are integers entered by the user.

[Hint: xy]

**Answer:**

public class Main {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter (x) Base Number: ");

int x = sc.nextInt();

System.out.print("Enter (y) Exponent Number: ");

int y = sc.nextInt();

int result = 1;

if (y == 0) {

result = 1;

} else {

for (int i = 0; i < y; i++) {

result \*= x;

}

}

System.out.println("x^y = " + result);

}

}

**(CLO\_2): (Cognitive Level C3, GA\_2, i.e., Apply basic programing Concepts)**

Q3. Make a program with a function method, to ask the user to enter the marks of 4 subjects and the max marks, then calculate according the following menu:

1. Calculate the total and display it.

2. Calculate the total percentage and display it.

3. Calculate overall grade.

A+ grade: 90% - 100%, A grade: 80% - 89%, B+ grade: 70%-79%,

B grade: 60% - 69%, C grade: 50% to 59%, D grade: 40% - 49%.

Fail for any other percentage.

[Hint: Use switch case statement for menu selection and if else to display the grade. ]

**Answer:**

import java.util.Scanner;

public class Main {

static void calculation(int choice, float m1, float m2, float m3, float m4, float maxMarks) {

float totalMarks = m1 + m2 + m3 + m4;

float percentage = (totalMarks / maxMarks) \* 100;

switch (choice) {

case 1:

System.out.println("Total Marks: " + totalMarks);

break;

case 2:

System.out.println("Total Percentage: "+ percentage +"%");

break;

case 3:

System.out.print("Overall Grade: ");

if (percentage >= 90) {

System.out.println("A+");

} else if (percentage >= 80) {

System.out.println("A");

} else if (percentage >= 70) {

System.out.println("B+");

} else if (percentage >= 60) {

System.out.println("B");

} else if (percentage >= 50) {

System.out.println("C");

} else if (percentage >= 40) {

System.out.println("D");

} else {

System.out.println("Fail");

}

break;

default:

System.out.println("Invalid Selection!");

}

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter the maximum marks: ");

float maxMarks = sc.nextFloat();

System.out.print("Enter 1st Subject Marks: ");

float m1 = sc.nextFloat();

System.out.print("Enter 2nd Subject Marks: ");

float m2 = sc.nextFloat();

System.out.print("Enter 3rd Subject Marks: ");

float m3 = sc.nextFloat();

System.out.print("Enter 4th Subject Marks: ");

float m4 = sc.nextFloat();

System.out.println("\nMenu:");

System.out.println("1. Calculate the total and display it.");

System.out.println("2. Calculate the total percentage and display it.");

System.out.println("3. Calculate overall grade.");

System.out.print("Enter your choice: ");

int choice = sc.nextInt();

calculation(choice, m1, m2, m3, m4, maxMarks);

}

}

**(CLO\_2): (Cognitive Level C3, GA\_2, i.e., Applying basic programming)**

Q4. Give the output of the following programs:

|  |  |
| --- | --- |
| **a)**  public class Demo{     public static void main(String[] arr){          int num1 = 100, num2 = 100;          int num3 = 500, num4 = 600;        if(num1==num2)  {              System.out.println("num1 == num2");          }          else  {              System.out.println("num1 != num2");          }          if(num3 == num4)  {              System.out.println("num3 == num4");          }          else  {              System.out.println("num3 != num4");           }      }  } | **b)**  public class Test {  public static void main(String[] args) {  int i;  for (i=1;i<=5;i++)  {  System.out.println(i + ")"+i\*i);  }  }  } |

**Answer:**

**a):**

num1 == num2

num3 != num4

**b):**

1)1

2)4

3)9

4)16

5)25

**(CLO\_2): (Cognitive Level C3, GA\_2, i.e., Applying basic programming)**

Q5. Find the errors in the following programs:

|  |  |
| --- | --- |
| **a)**  public class Loop {  public static void main(String args[])  {  System.out.println("Multiplication Table of 7");  int a = 7, ans;  int i;  for(i=1; i<=10; i++}  {  for (i = 1, i <= 10; i++)  {  ans = a \* i;  System.out.println(ans);  }  }  }  } | **b)**  public class HiFive {  public static void main(String args[])  {  int a = 2, b = 8, c = 6;  System.out.println("Finding the largest number \n");  if (a > b && a > c)  {  System.out.println(a + " is the largest Number");  }  else if (b > a && b > c)  {  System.out.println(b + " is the smallest Number");  }  else  System.out.println(c + " is the largest Number");  }  } |

**Answer:**

**a):**

Incorrect use of closing bracket } in the for loop.

* Instead of for(i=1; i<=10; i++}, it should be for(i=1; i<=10; i++).

Unnecessary nested loop.

* The outer loop is redundant; only a single loop is needed to print the multiplication table.

**b):**

Incorrect print message for the second condition.

* Instead of "b is the smallest Number", it should be "b is the largest Number".