

## Assignment 2

### 1. Write a java program for Matrix Addition.

```
import java.util.Scanner;

class AddMatrix
{
    public static void main(String args[])
    {
        int m, n, c, d;

        Scanner in = new Scanner(System.in);

        System.out.println("Enter the number of rows and columns of matrix");
        m = in.nextInt();
        n = in.nextInt();

        int first[][] = new int[m][n];
        int second[][] = new int[m][n];
        int sum[][] = new int[m][n];

        System.out.println("Enter the elements of first matrix");
        for (c = 0; c < m; c++)
            for (d = 0; d < n; d++)
                first[c][d] = in.nextInt();

        System.out.println("Enter the elements of second matrix");
        for (c = 0 ; c < m; c++)
            for (d = 0 ; d < n; d++)
                second[c][d] = in.nextInt();

        for (c = 0; c < m; c++)
            for (d = 0; d < n; d++)
                sum[c][d] = first[c][d] + second[c][d];

        System.out.println("Sum of the matrices:");
        for (c = 0; c < m; c++)
        {
            for (d = 0; d < n; d++)
                System.out.print(sum[c][d] + "\t");

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

Output: Enter the number of rows and columns of matrix

2 2

Enter the elements of first matrix

1 2

3 4

Enter the elements of second matrix

4 3

2 1

Sum of the matrices:

5 5

5 5

## 2. Write a java program for Matrix Multiplication

```
public class MatrixMultiplicati{
public static void main(String args[]){

int a[][]={{ 1,1,1},{2,2,2},{3,3,3}};
int b[][]={{ 1,1,1},{2,2,2},{3,3,3}};

int c[][]=new int[3][3]; //3 rows and 3 columns
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
c[i][j]=0;
for(int k=0;k<3;k++)
{
c[i][j]+=a[i][k]*b[k][j];
}
System.out.print(c[i][j]+" ");
}
System.out.println();//new line  } }}
```

Output:

6 6 6

12 12 12

18 18 18

### 3. Write a java program to demonstrate method overloading

```
class DisplayOverloading
{
    public void disp(char c)
    {
        System.out.println(c);
    }
    public void disp(char c, int num)
    {
        System.out.println(c + " "+num);
    }
}
class Sample
{
    public static void main(String args[])
    {
        DisplayOverloading obj = new DisplayOverloading();
        obj.disp('a');
        obj.disp('a',10);
    }
}
```

Output:

a

a 10

### 4. Write a java program to create a class Point with two data members x & y. Include all constructors and display().

```
class Circle {
    double x,y;
    double r; // The radius
    // Method that returns circumference
    double circumference(){
        return 2*3.14159*r;
    }
}
```

```
// Method that returns area

double area(){
    return (22/7)*r*r;
}

}

//The following class declares an object of type Circle
class Demonstration_31{
    public static void main(String args[]){
        Circle c = new Circle();
        c.x = 0.0;
        c.y = 0.0;
        c.r = 5.0;
        System.out.println("Circumference" + c.circumference());
        System.out.println("Area" + c.area());
    }
}
```

Output:

Circumference31.4159

Area75.0

## 5. Write a java program using static method

```
class Languages {
    public static void main(String[] args) {
        display();
    }
    static void display() {
        System.out.println("Java is my favorite programming language.");
    }
}
```

Output:

Java is my favorite programming language.

## 1.What is conditional statement?

A conditional statement is a statement that computer programming language used to decide which code has to be run when the true condition is met or which code has not to be run when the true condition is not met.

1. if statement
2. nested if statement
3. if-else statement
4. if-else-if statement
5. Switch Case Statement

## 2.Write the syntax of switch..case statement.

```
switch (variable/expression) {
```

```
case value1:
```

```
    // statements of case1
```

```
    break;
```

```
case value2:
```

```
    // statements of case2
```

```
    break;
```

```
.. .. .
```

```
.. .. .
```

```
default:
```

```
    // default statements
```

```
}
```

## 3. Write the difference between break and continue statement.

### break

1. It terminates the execution of remaining iteration of the loop.
2. 'break' resumes the control of the program to the end of loop enclosing that 'break'.
3. It causes early termination of loop.
4. 'break' stops the continuation of loop.
5. 'break' can be used with 'switch', 'label'.

## continue

1. It terminates only the current iteration of the loop.
2. 'continue' resumes the control of the program to the next iteration of that loop enclosing 'continue'.
3. It causes early execution of the next iteration.
4. 'continue' do not stops the continuation of loop, it only stops the current iteration.
5. 'continue' cannot be executed with 'switch' and 'labels'.

## 4.What is looping statement?

A loop statement allows us to execute a statement or group of statements multiple times.

There are 3 types of loop statements.

1. while loop
2. for loop
3. do..while loop

## 5. Write the difference between while and do..while statement.

The while loop in java executes one or more statements after testing the loop continuation condition at the start of each iteration. The do-while loop, however, tests the loop continuation condition after the first iteration has completed. Therefore, the do-while loop guarantees one execution of the loop logic whereas the while does not.

```
public class WhileAndDoWhileLoop {  
    public static void main(String args[]) {  
        int i=5;  
        System.out.println("Test while Loop:");  
        while(i < 5) {  
            System.out.println("Iteration: "+ ++i);  
        }  
        System.out.println("Test do-while Loop:");  
        i=5;  
        do {  
            System.out.println("Iteration: "+ ++i);  
        } while(i < 5);  
    }  
}
```

In the above example, The while loop statement will not execute at all. However, one iteration of the do-while loop will execute.

Test while Loop:

Test do-while Loop:

Iteration: 6

## 6. What is array? How it is created?

An array is a group of like-typed variables that are referred to by a common name.

The general form of a one-dimensional array declaration

```
type var-name[];
```

OR

```
type[] var-name;
```

An array declaration has two components: the type and the name. type declares the element type of the array. The element type determines the data type of each element that comprises the array.

```
int intArray[];
```

```
or int[] intArray;
```

When an array is declared, only a reference of array is created. To actually create or give memory to array, you create an array like this: The general form of new as it applies to one-dimensional arrays appears as follows:

```
var-name = new type [size];
```

Example:

```
int[] intArray = new int[20];
```

## 7. What is class?

A class is a user defined blueprint or prototype from which objects are created. It represents the set of properties or methods that are common to all objects of one type. In general, class declarations can include these components, in order:

- 1.Modifiers : A class can be public or has default access (Refer this for details).
- 2.Class name: The name should begin with a initial letter (capitalized by convention).
- 3.Superclass(if any): The name of the class's parent (superclass), if any, preceded by the keyword extends. A class can only extend (subclass) one parent.
- 4.Interfaces(if any): A comma-separated list of interfaces implemented by the class, if any, preceded by the keyword implements. A class can implement more than one interface.
- 5.Body: The class body surrounded by braces, { }.

## 8. What is constructor?

Constructor is a special method that is used to initialize a newly created object and is called just after the memory is allocated for the object. It can be used to initialize the objects to desired values or default values at the time of object creation.

## 9. What is the use of copy constructor?

A copy constructor in a Java class is a constructor that creates an object using another object of the same Java class. That's helpful when we want to copy a complex object that has several fields, or when we want to make a deep copy of an existing object.

## 10. What is the use of this keyword?

this keyword in Java is a special keyword that can be used to represent the current object or instance of any class in Java. "this" keyword can also call the constructor of the same class in Java and used to call overloaded constructor.

## 11. What is method overloading?

Method Overloading is a feature that allows a class to have more than one method having the same name, if their argument lists are different.

In order to overload a method, the argument lists of the methods must differ in either of these:

1. Number of parameters.
2. Data type of parameters.
3. Sequence of Data type of parameters.

## 12. What is static variable?

Static variable in Java is variable which belongs to the class and initialized only once at the start of the execution. These variables will be initialized first, before the initialization of any instance variables.

- A single copy to be shared by all instances of the class
- A static variable can be accessed directly by the class name and doesn't need any object

## 13. What is access modifier?

Access modifiers are reserved keywords that provide a different level public, of access to classes, methods, fields, etc. Reserved keywords for access modifiers are protected, and private



## 14. Write the difference between instance and static methods.

### Instance method

1. Instance methods are methods which require an object of its class to be created before it can be called.  
that can be called without creating an object of class.
2. Instance method is not with static keyword.  
keyword.
3. Instance methods exist as multiple copies depending on the number of instances created for that class.  
as a single copy for a class.

### Static method

1. Static methods are the methods in Java
2. Static method is declared with static
3. Static method means which will exist

## 15. What is object? How it is created?

An object is an instance of a class. Each object has its own state, behavior, and identity. Objects can communicate with other objects by calling functions. An object is created from a class. In Java, the `new` keyword is used to create new objects. There are three steps when creating an object from a class –

Declaration – A variable declaration with a variable name with an object type.

Instantiation – The `'new'` keyword is used to create the object.

Initialization – The `'new'` keyword is followed by a call to a constructor.

This call initializes the new object.

Syntax:

```
Classname objectname = new Classname();
```