OOPS LAB
LAB 3

Mayon Francis
CS3A 44

Program 1

Write a Java program to reverse a given string.

```
//String Reverse
import java.util.Scanner;

public class strRev {
	public static void main(String args[]) {
		Scanner sc = new Scanner(System.in);
		String input, reverse="";
		int len;

		System.out.print("Enter a string: ");
		input = sc.nextLine();
		len = input.length();

		int i = len-1;
		while(i >= 0){
			reverse = reverse + input.charAt(i);
			i--;
		}
		System.out.println("Reverse is: " + reverse);
	}
}
```

Program 2

Write a Java program to display the transpose of a given matrix.

```
//Matrix Transpose
import java.util.Scanner;

public class Transpose {
	public static void main(String args[]) {
		Scanner sc = new Scanner(System.in);

		int[][] A, B;
		int m, n;

		System.out.print("Enter Number of rows: ");
		m = sc.nextInt();
		System.out.print("Enter Number of colums: ");
		n = sc.nextInt();

		A = new int[m][n];
		B = new int[n][m];

		System.out.println("Enter Matrix Row wise: ");
		getMatrix  (A, m, n);
		System.out.println("You Entered: ");
		printMatrix(A, m, n);
		B = transposeMatrix(A, m, n);

		System.out.println("Transpose is:: ");
		printMatrix(B, n, m);
	}


	static void getMatrix( int Arr[][], int m, int n ) {
		Scanner  sc = new Scanner(System.in);
		for (int i=0; i<m; i++) {
			for (int j=0; j<n; j++) {
				Arr[i][j] = sc.nextInt();
			}
		}
	}

	static void printMatrix( int Arr[][], int m, int n ) {
		for (int i=0; i<m; i++) {
			for (int j=0; j<n; j++) {
				System.out.print(Arr[i][j] + " ");
			}
			System.out.println();
		}
	}
```

```
	static int[][] transposeMatrix( int Arr[][], int m, int n ) {
		int[][] transp = new int[n][m];

		for (int i=0; i<m; i++) {
			for (int j=0; j<n; j++) {
				transp[j][i] = Arr[i][j];
			}
		}
		return transp;
	}
}
```

Program 3

Write a Java program to find the second smallest element in an array.

```
// second Smallest
import java.util.Scanner;

public class SecondSmallest {
	public static void main(String args[]) {
		Scanner sc = new Scanner(System.in);

		int[] A;
		int n, smallest = Integer.MAX_VALUE, secondSmallest =  Integer.MAX_VALUE;
		System.out.print("Enter Number of elements: ");
		n = sc.nextInt();
		A = new int[n];


		System.out.println("Enter Numbers: ");

		for(int i = 0; i<n; i++) {
			System.out.print("> ");
			A[i] = sc.nextInt();

			if(A[i] < smallest) {
				secondSmallest = smallest;
				smallest = A[i];
			}
			else if(A[i] < secondSmallest) {
				secondSmallest = A[i];
			}
		}

		System.out.println("Second Smallest: " + secondSmallest);
	}

}
```

Program 4

Write a Java program to check whether a given number is prime or not.

```
// checkPrime
import java.util.Scanner;
import java.lang.Math;

public class CheckPrime {
	public static void main(String args[]) {
		Scanner sc = new Scanner(System.in);
		int n;
		boolean isPrime = true;
		System.out.print("Enter a Number: ");
		n = sc.nextInt();


		for(int i = 2; i <= Math.sqrt(n); i++) {
			if( n%i == 0 ) {
				isPrime = false;
				break;
			}
		}
		if(isPrime)
			System.out.println("This is prime");
		else
			System.out.println("This is not prime");
	}

}
```