LAB 2

Mayon Francis
CS3A 44

Program 1

Write a JAVA program that checks whether a given string is a palindrome or not
Input: String read from keyboard
Output: Message displayed

```
//Palindrome
import java.util.Scanner;

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

		Scanner  sc = new Scanner(System.in);
		System.out.println("Enter a string");
		String usrInput = sc.nextLine();
		int len = usrInput.length();
		int flag = 1;
		for(int i=0; i<(len/2); i++) {
			if(   !(usrInput.charAt(i) == usrInput.charAt(len-1-i) ) ) {
				 flag = 0;
				break;
			}
		}
		if( flag == 1)
			System.out.println("This is a palindrome");
		else
			System.out.println("This is not a palindrome");
	}
}
```

OUTPUT

```
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$ java Palindrome
Enter a string
OPPO
This is a palindrome
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$ java Palindrome
Enter a string
oops
This is not a palindrome
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$
```

Program 2

Write a Java program to find the frequency of given character in a string.
Input: String read from keyboard
Character read from keyboard.
Output: Number of occurrences of the character in the string

```
//CharFrequency
import java.util.Scanner;

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

		String usrInput;
		char ch;
		int len, freq = 0;
		Scanner  sc = new Scanner(System.in);
		System.out.println("Enter a string");
		usrInput = sc.nextLine();
		System.out.println("Enter a character");
		ch = sc.next().charAt(0);

		len = usrInput.length();
		for(int i=0; i<len; i++) {
			if(   ch == usrInput.charAt(i)  ) {
				freq++;
			}
		}
		System.out.println("\"" + ch + "\" Occurs " + freq + " times in : \""  + usrInput + "\" ");

	}
}
```

OUTPUT

-

```
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$ java CharFrequency
Enter a string
This is a good day
Enter a character
a
"a" Occurs 2 times in : "This is a good day"
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$
```

Program 3

Write a Java program to multiply two given matrices.
Input: Dimensions of two matrices (MxN, PxQ)
: If dimensions are suitable for multiplication, read two integer matrices, say A and B
Output: Matrices A, B and C = A*B displayed / Error message

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

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

		int m, n, p, q;
		int A[][], B[][], C[][];
		Scanner  sc = new Scanner(System.in);
		System.out.println("Enter a No. of rows of matrix A");
		m = sc.nextInt();
		System.out.println("Enter a No. of columns of matrix A");
		n = sc.nextInt();
		System.out.println("Enter a No. of rows of matrix B");
		p = sc.nextInt();
		System.out.println("Enter a No. of columns of matrix B");
		q = sc.nextInt();

		if( n!= p ) {
			System.out.println("Matrices are incompatible for multiplication! \n Exiting.");
			System.exit(0);
		}
		A = new int[m][n];
		B = new int[p][q];
		C = new int[m][q];

		System.out.println("Enter a matrix A row wise");
		getMatrix(A, m, n);
		System.out.println("Enter a matrix B row wise");
		getMatrix(B, p, q);

		System.out.println("Matrix A :");
		printMatrix(A, m, n);
		System.out.println("Matrix B :");
		printMatrix(B, p, q);

		multMatrix( A, n, m, B, p, q , C);

		System.out.println("A mult by B :");
		printMatrix(C, m, q);
```

```
	}

	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 void multMatrix( int Arr1[][], int n, int m, int Arr2[][], int p, int q , int out[][]) {
		for (int i=0; i<m; i++) {
			for (int j=0; j<q; j++) {
				for ( int k=0; k<n; k++)  {
					out[i][j] = out[i][j] + Arr1[i][k] * Arr2[k][j] ;
				}
			}
		}
	}
}
```

OUTPUT

```
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$ java matrixMult
Enter a No. of rows of matrix A
2
Enter a No. of columns of matrix A
3
Enter a No. of rows of matrix B
3
Enter a No. of columns of matrix B
2
Enter a matrix A row wise
1
2
3
4
5
6
Enter a matrix B row wise
1
2
3
4
5
6
Matrix A :
1 2 3
4 5 6
Matrix B :
1 2
3 4
5 6
A mult by B :
22 28
49 64
mec@cc-1-3:~/Mayon/OOPS_LAB_JAVA_MEC/Second Lab/build$
```