

Tender Heart School

Class - X (2021-22)

Computer Application Assignment

Students of Class X-Computer Application as per requirement of CISCE (ICSE Board), have to make a practical file in the subject of Computer Application

Work Specification: Java assignments to be completed for ICSE 2021-22 practical file

Materials /Resources Required: Computer with BlueJ installed, A4 Sheets ruled and plain sheets for output.

Instructions /Guidelines : Complete any 5 Assignments from the assignment list.

1. For each assignment, arrange sheets having:
 - a. Problem Statement
 - b. Coding
 - c. Input / Output screen
 2. Each Page must have a specified page number.
 3. New program will start from new page.
 4. Presentation must be upto the mark and impressive as assignment is an essential part of internal assessment by ICSE board.
 5. For reference a sample programs are being attached with.
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List of Programs covering various levels of difficulties as per syllabus given by CISCE (ICSE Board)

1. Write a program in Java to accept a number and Display Fibonacci series up to a given number.
2. To print the Floyd's triangle.
3. To display diamond of stars(*) based on value of n.
4. Program to make a simple calculator.
5. Write a program to store 20 numbers (even and odd numbers) in a Single Dimensional Array (SDA). Calculate and display the sum of all even numbers and all odd numbers separately.
6. Write a program to create an object and invoke student name , marks obtained in subjects, total of marks, average of marks.
7. Define a class Bill that calculates the telephone bill of a consumer having name , number of calls, total bill.
8. Write a program to check whether the number is prime or not prime.
9. Program to display Sandglass Star Pattern.
10. Write a program to input two strings. Check both the strings and remove all common characters from both the strings. Print both the strings after removing the common characters.

1. Write a program in Java to accept a number and Display Fibonacci series up to a given number

Fibonacci Series: The Fibonacci Sequence is the series of numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ... The first two numbers in the series is '0' and '1' and every next number is found by adding up the two numbers before it. The 2 is found by adding the two numbers before it (1+1) Similarly, the 3 is found by adding the two numbers before it (1+2), And the 5 is (2+3), and so on!

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811, ...

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

int n = 100, firstTerm = 0, secondTerm = 1;

System.out.println("Fibonacci Series Upto " + n + ": ");

while (firstTerm<= n) {
System.out.print(firstTerm + ", ");

intnextTerm = firstTerm + secondTerm;
firstTerm = secondTerm;
secondTerm = nextTerm;

    }
}
}
```

2. To print the Floyd's triangle [Given below]

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

/ Java program to display Floyd's triangle

// Importing Java libraries

```
import java.util.*;
```

```
class GFG {
```

```
    // Main driver method
```

```
    public static void main(String[] args)
```

```
    {
```

```
        // No of rows to be printed
```

```
        int n = 5;
```

```
        // Creating and initializing variable for
```

```
        // rows, columns and display value
```

```
        int i, j, k = 1;
```

```
        // Nested iterating for 2D matrix
```

```
        // Outer loop for rows
```

```
        for (i = 1; i <= n; i++)
```

```
{
```

```
            // Inner loop for columns
```

```
            for (j = 1; j <= i; j++) {
```

```
                // Printing value to be displayed
```

```
                System.out.print(k + " ");
```

```
                // Incrementing value displayed
```

```
                k++;
```

```
            }
```

```
            // Print elements of next row
```

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

```
        }
```

```
    }
```

```
}
```

3. To display diamond of stars(*) based on value of n. For example if n=7 then print,

```
import java.util.Scanner;

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

        //Taking noOfRows value from the user

        System.out.println("How Many Rows You Want In Your Diamond?");

        int noOfRows = sc.nextInt();

        //Getting midRow of the diamond

        int midRow = (noOfRows)/2;

        //Initializing row with 1

        int row = 1;

        System.out.println("Here Is Your Diamond : ");

        //Printing upper half of the diamond

        for (int i = midRow; i > 0; i--)
        {
            //Printing i spaces at the beginning of each row

            for (int j = 1; j <= i; j++)
            {
                System.out.print(" ");
            }

            //Printing j *'s at the end of each row

            for (int j = 1; j <= row; j++)
            {
                System.out.print("* ");
            }

            System.out.println();

            //Incrementing the row

            row++;
        }
    }
}
```

```

//Printing lower half of the diamond

for (int i = 0; i <= midRow; i++)
{
    //Printing i spaces at the beginning of each row

    for (int j = 1; j <= i; j++)
    {
        System.out.print(" ");
    }

    //Printing j *'s at the end of each row

    for (int j = row; j > 0; j--)
    {
        System.out.print("* ");
    }

    System.out.println();

    //Decrementing the row

    row--;
}
}
}

```

Output :

How Many Rows You Want In Your Diamond?

7

Here Is Your Diamond :

```

*
**
***
****
***
**
*

```

4. Program to make a calculator using switch case in Java

```
import java.util.Scanner;
public class JavaExample {
public static void main(String[] args) {
double num1, num2;
Scanner scanner = new Scanner(System.in);
System.out.print("Enter first number:");

/* We are using data type double so that user
 * can enter integer as well as floating point
 * value
 */
num1 = scanner.nextDouble();
System.out.print("Enter second number:");
num2 = scanner.nextDouble();

System.out.print("Enter an operator (+, -, *, /): ");
char operator = scanner.next().charAt(0);

scanner.close();
double output;

    switch(operator)
    {
case '+':
    output = num1 + num2;
break;

case '-':
    output = num1 - num2;
break;

case '*':
    output = num1 * num2;
break;

case '/':
    output = num1 / num2;
break;

/* If user enters any other operator or char apart from
 * +, -, * and /, then display an error message to user
 *
 */
default:
System.out.printf("You have entered wrong operator");
return;
    }

System.out.println(num1+" "+operator+" "+num2+": "+output);
}}
```

Output:

Enter first number:40

Enter second number:4

Enter an operator (+, -, *, /): /

40.0 / 4.0: 10.0

5. Write a program in Java to store 20 numbers (even and odd numbers) in a Single Dimensional Array (SDA). Calculate and display the sum of all even numbers and all odd numbers separately.

```
import java.util.Scanner;

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

        Scanner in = new Scanner(System.in);
        int arr[] = new int[20];

        System.out.println("Enter 20 numbers");
        for (int i = 0; i < arr.length; i++) {
arr[i] = in.nextInt();
        }

        int oddSum = 0, evenSum = 0;

        for (int i = 0; i < arr.length; i++) {
            if (arr[i] % 2 == 0)
                evenSum += arr[i];
else
            oddSum += arr[i];
        }

        System.out.println("Sum of Odd numbers = " + oddSum);
        System.out.println("Sum of Even numbers = " + evenSum);
    }
}
```

Output

```
Enter 20 numbers
10
11
12
89
96
54
55
53
52
41
40
39
37
38
15
16
17
18
19
20
Sum of Odd numbers = 376
Sum of Even numbers = 356
```

6. Define a class Student with the following specifications

Data Members	Purpose
String name	To store the name of the student
inteng	To store marks in English
inthn	To store marks in Hindi
intmts	To store marks in Maths
double total	To store total marks
doubleavg	To store average marks

Member Methods	Purpose
void accept()	To input marks in English, Hindi and Maths
void compute()	To calculate total marks and average of 3 subjects
void display()	To show all the details viz. name, marks, total and average

Write a program to create an object and invoke the above methods.

```
import java.util.Scanner;
public class Student
{
    private String name;
    private int eng;
    private int hn;
    private int mts;
    private double total;
    private double avg;
    public void accept() {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter student name: ");
        name = in.nextLine();
        System.out.print("Enter marks in English: ");
        eng = in.nextInt();
        System.out.print("Enter marks in Hindi: ");
        hn = in.nextInt();
        System.out.print("Enter marks in Maths: ");
        mts = in.nextInt();
    }
    public void compute() {
        total = eng + hn + mts;
        avg = total / 3.0;
    }
    public void display() {
        System.out.println("Name: " + name);
        System.out.println("Marks in English: " + eng);
        System.out.println("Marks in Hindi: " + hn);
        System.out.println("Marks in Maths: " + mts);
        System.out.println("Total Marks: " + total);
        System.out.println("Average Marks: " + avg);
    }
}
```



```
public static void main(String args[]) {  
    Student obj = new Student();  
    obj.accept();  
    obj.compute();  
    obj.display();  
    }  
}
```

Output

```
Enter student name: Preeti Pathak  
Enter marks in English: 86  
Enter marks in Hindi: 92  
Enter marks in Maths: 95  
Name: Preeti Pathak  
Marks in English: 86  
Marks in Hindi: 92  
Marks in Maths: 95  
Total Marks: 273.0  
Average Marks: 91.0
```

7. Define a class Bill that calculates the telephone bill of a consumer with the following description:

Data Members	Purpose
intbno	bill number
String name	name of consumer
int call	no. of calls consumed in a month
doubleamt	bill amount to be paid by the person

Member Methods	Purpose
Bill()	constructor to initialize data members with default initial value
Bill()	parameterised constructor to accept billno, name and no. of calls consumed
Calculate()	to calculate the monthly telephone bill for a consumer as per the table
Display()	to display the details

Units consumed	Rate
First 100 calls	0.60 / call
Next 100 calls	0.80 / call
Next 100 calls	1.20 / call
Above 300 calls	1.50 / call

Fixed monthly rental applicable to all consumers: 125

Create an object in the main() method and invoke the above functions to perform the desired task.

```
import java.util.Scanner;
```

```
public class Bill
{
private int bno;
private String name;
private int call;
private double amt;

public Bill() {
bno = 0;
name = "";
call = 0;
amt = 0.0;
}

public Bill(int bno, String name, int call) {
this.bno = bno;
this.name = name;
this.call = call;
}

public void calculate() {
double charge;
if (call <= 100)
charge = call * 0.6;
```

```

else if (call <= 200)
charge = 60 + ((call - 100) * 0.8);
else if (call <= 300)
charge = 60 + 80 + ((call - 200) * 1.2);
else
charge = 60 + 80 + 120 + ((call - 300) * 1.5);

amt = charge + 125;
}

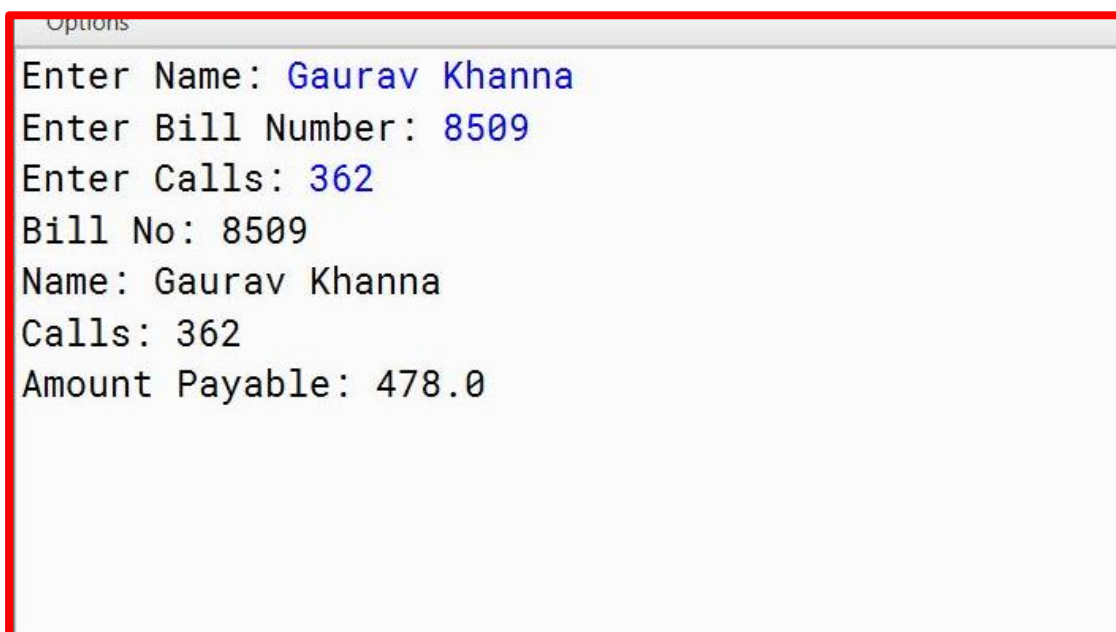
public void display() {
System.out.println("Bill No: " + bno);
System.out.println("Name: " + name);
System.out.println("Calls: " + call);
System.out.println("Amount Payable: " + amt);
}
public static void main(String args[]) {

Scanner in = new Scanner(System.in);
System.out.print("Enter Name: ");
String custName = in.nextLine();
System.out.print("Enter Bill Number: ");
intbillNum = in.nextInt();
System.out.print("Enter Calls: ");
intnumCalls = in.nextInt();

Bill obj = new Bill(billNum, custName, numCalls);
obj.calculate();
obj.display();
}
}

```

Output



```

Options
Enter Name: Gaurav Khanna
Enter Bill Number: 8509
Enter Calls: 362
Bill No: 8509
Name: Gaurav Khanna
Calls: 362
Amount Payable: 478.0

```

8. Write a program by using a class with the following specifications:

Class name — Prime

Data members — private int n

Member functions:

1. void input() — to input a number
2. void checkprime() — to check and display whether the number is prime or not

Use a main function to create an object and call member methods of the class.

```
import java.util.Scanner;
```

```
public class Prime  
{  
    private int n;
```

```
    public void input() {  
        Scanner in = new Scanner(System.in);  
        System.out.print("Enter the number: ");  
        n = in.nextInt();  
    }
```

```
    public void checkprime() {  
        boolean isPrime = true;  
        if (n == 0 || n == 1)  
            isPrime = false;  
        else {
```

```
            for (int i = 2; i <= n / 2; i++) {  
                if (n % i == 0) {  
                    isPrime = false;  
                    break;  
                }  
            }  
        }
```

```
        if (isPrime)  
            System.out.println("Prime Number");  
        else  
            System.out.println("Not a Prime Number");  
    }
```

```
    public static void main(String args[])  
    {  
  
        Prime obj = new Prime();  
        obj.input();  
        obj.checkprime();  
    }  
}
```

Output

```
Enter the number: 17  
Prime Number  
Enter the number: 21  
Not a Prime Number
```

9. Write a program to input two strings. Check both the strings and remove all common characters from both the strings. Print both the strings after removing the common characters.

```
public class CommonCharacter {

    public void removeCommonCharacter(String s1, String s2){
        System.out.println("Before removing common character s1 " + s1);
        System.out.println("Before removing common character s2 " + s2);
        String commonChars = "";

        for (int i = 0; i < s1.length(); i++) {
            for (int j = 0; j < s2.length(); j++) {
                if (s1.charAt(i) == s2.charAt(j)) {
                    commonChars += s1.charAt(i);
                }
            }
        }

        for(int i = 0; i <commonChars.length(); i ++) {
            String charToRemove = commonChars.charAt(i)+"";
            s1 = s1.replace(charToRemove, "");
            s2 = s2.replace(charToRemove, "");
        }
        System.out.println("After removing common character " + s1);
        System.out.println("After removing common character " + s2);
    }

    public static void main(String[] args){
        CommonCharacter common Character = new Common Character();
        common Character.removeCommon Character("abcfgh", "aasdf");
    }
}
```

10. Write a program to print Sandglass Star Pattern

```
import java.util.Scanner;
public class Edureka
{
public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the number of rows: ");

    int rows = sc.nextInt();
    for (int i= 0; i<= rows-1 ; i++)
    {
    for (int j=0; j <i; j++)
    {
    System.out.print(" ");
    }
    for (int k=i; k<=rows-1; k++) { System.out.print("*" + " "); } System.out.println(""); }
    for (int i= rows-1; i>= 0; i--)
    {
    for (int j=0; j< i ;j++)
    {
    System.out.print(" ");
    }
    for (int k=i; k<=rows-1; k++)
    {
    System.out.print("*" + " ");
    }
    System.out.println("");
    }
    sc.close();
    }
}
```

Output

Enter the number of rows: 5

```
* * * * *
 * * * *
  * * *
   * *
    *
     *
    * *
   * * *
  * * * *
 * * * * *
```

Tender Heart School

Class - X (2021-22)

Computer Application- Project

Students of Class X-Computer Application as per requirement of CISCE (ICSE Board), have to make one real life project using the concepts taught.

Work Specification: Java Project to be completed for ICSE 2021-22

Materials /Resources Required: Computer with BlueJ installed, A4 Sheets for Printing.

Instructions / Guidelines :

1. First step is to design a problem then, invention of an algorithm and only then implementation and testing.
2. First page will be the cover page. Write your name, class, section, subject, and to whom it is to be submitted.
3. Acknowledgement
4. Index
5. Topic of the project
6. Content
7. Conclusion
8. Bibliography / References
9. Each Page must have a specified page number.
10. Presentation must be upto the mark and impressive as project is an essential part of internal assessment by ICSE board.
11. Before spiral binding take the printout and get them checked from subject teacher.
12. Softcopy also required in form of CD- having name, class, section, roll number and subject

Suggested list of Projects as per CISCE (ICSE Board) is given below. Complete any 1 Project.

1. Find the Country capital and telephone dialing code, based on the Country name
2. Making some sort of Calculator
3. Banking: Search for a customer, display details, allow transaction
4. School library system
5. Make a game- Example: Crorepati Quiz Game, Bouncing Ball
6. Traffic lights, traffic signal management and control system
7. Inventory management in Retail Outlet
8. Office attendance
9. Company Payroll
10. Automatic Teller Machines (ATM)
11. A musical composition
12. A clinical diagnostic system
13. Cricket Score Board
14. Graphical Analog CLOCK
15. Theatre Tickets Sales
16. Train Reservation