

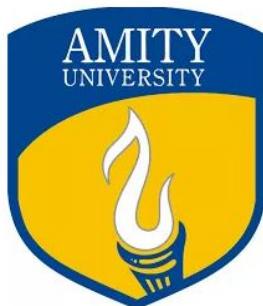
# **Java programming**

## **IT 201**

*Practical File*

*submitted to the*

*Amity University Uttar Pradesh*



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**2022**

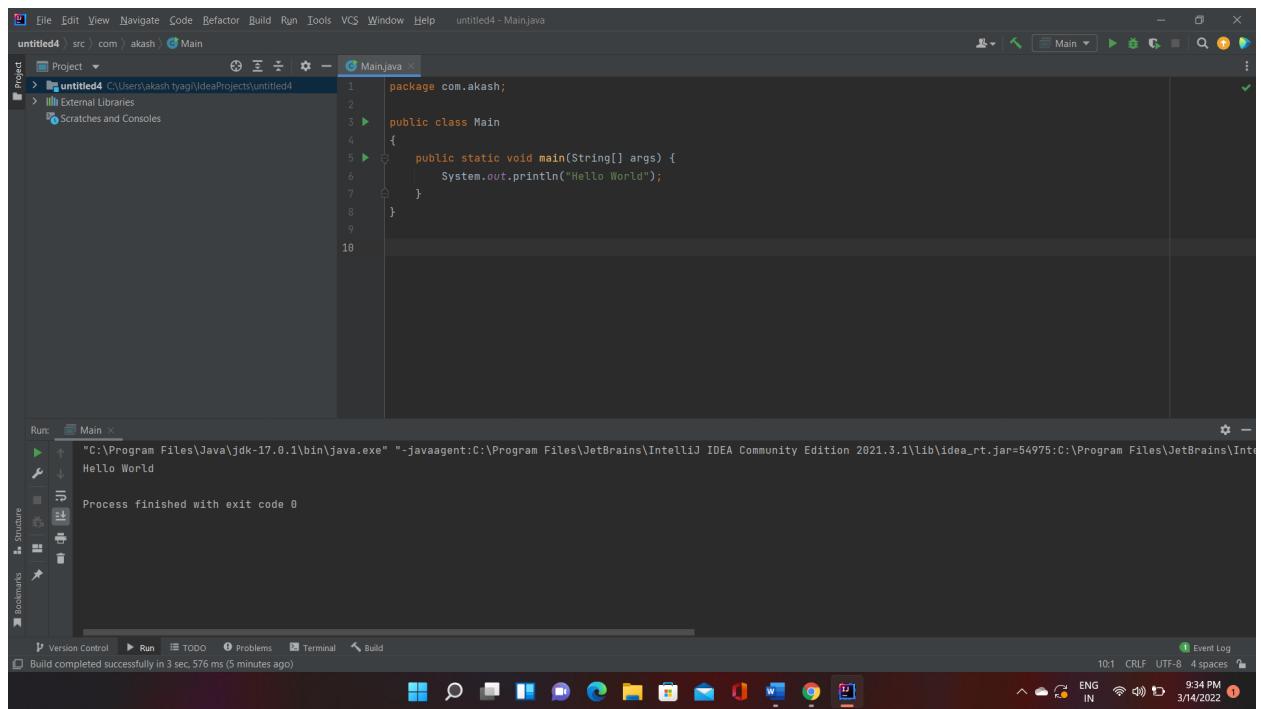
<b>S.No</b>	<b>Name Of Experiment</b>	<b>Date of Allotment</b>	<b>Date of Evaluation</b>	<b>Faculty Signature</b>
1.	<p>Write a program in java to find the Factorial of a number.</p> <p>Write a program in java to find greatest of 3 numbers.</p> <p>Write a program in java to find leap year.</p> <p>Write a program in java to find Fibonacci series</p> <p>.</p>	10-01-2022		
2.	<p>Write a program in java to check number palindrome.</p> <p>Write a program in java to check string palindrome.</p> <p>WAP in java to calculate factorial of a number using command line arguments.</p>	17/01/2022		
3.				
4.				
5.				
6.				

7.	.			
8.				
9.				
10.				

## 1) WAP in Java to print “Hello world”.

Ans)

```
Package com.akash;  
  
public class Main  
{  
    public static void main(String[] args) {  
        System.out.println("Hello World");  
    }  
}
```



The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled4". The "Main.java" file is open in the editor, displaying the following code:

```
package com.akash;  
public class Main  
{  
    public static void main(String[] args) {  
        System.out.println("Hello World");  
    }  
}
```

In the "Run" tab, the output window shows:

```
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=54975:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8 Main  
Hello World  
Process finished with exit code 0
```

The status bar at the bottom right indicates the date and time as 3/14/2022 9:34 PM.

**2) Write a program in java to find the Factorial of a number.**

**ANS)**

```
import java.util.Scanner;  
public class Main  
{  
    public static void main(String []args)  
    {  
  
        Scanner sc=new Scanner(System.in);  
  
        System.out.println("Enter the number: ");  
        int num=sc.nextInt();  
        int i=1,fact=1;  
        while(i<=num)  
        {  
            fact=fact*i;  
            i++;  
        }  
        System.out.println("Factorial of the number: "+fact);  
    }  
}
```

The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled3". The code editor displays a file named "Main.java" containing the following code:

```
9     System.out.println("Enter the number: ");
10    int num=sc.nextInt();
11    int i=1,fact=1;
12    while(i<=num)
13    {
14        fact=fact*i;
15        i++;
16    }
17    System.out.println("Factorial of the number: "+fact);
18}
19}
20}
21}
22}
23}
```

The "Run" tool window at the bottom shows the execution results:

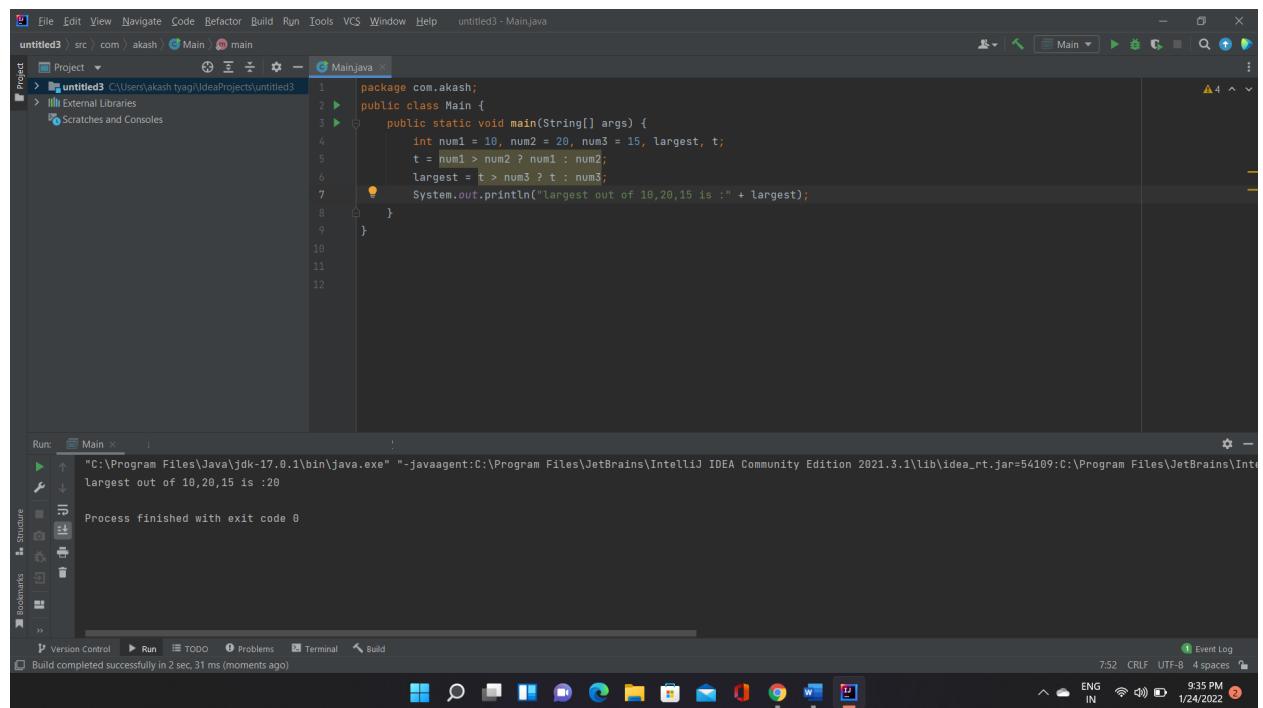
```
Run: Main x
" C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=54080:C:\Program Files\JetBrains\Inte
Enter the number:
10
Factorial of the number: 3628800
Process finished with exit code 0
```

The status bar at the bottom right indicates the build was completed successfully in 2 sec, 762 ms (moments ago) at 7:1 CRLF UTF-8 4 spaces.

### 3) Write a program in java to find greatest of 3 numbers.

ANS)

```
public class Main
{
    public static void main(String[] args) {
        int num1= 10, num2= 20 , num3= 15, largest, t;
        t=num1>num2?num1:num2;
        largest=t>num3?t:num3;
        System.out.println("largest out of 10,20,15 is :" +largest);
    }
}
```



#### **4) Write a program in java to find leap year.**

**Ans)**

```
public class Main {  
    public static void main(String[] args) {  
        // year to be checked  
        int year = 2004;  
        boolean leap = false;  
  
        // if the year is divided by 4  
        if (year % 4 == 0) {  
  
            // if the year is century  
            if (year % 100 == 0) {  
  
                // if year is divided by 400  
                // then it is a leap year  
                if (year % 400 == 0)  
                    leap = true;  
                else  
                    leap = false;  
            }  
  
            // if the year is not century  
            else  
                leap = true;  
        }  
  
        else  
            leap = false;
```

```

if (leap)

    System.out.println(year + " is a leap year.");

else

    System.out.println(year + " is not a leap year.");

}

```

The screenshot shows the IntelliJ IDEA interface with a Java file named Main.java open. The code checks if a given year is a leap year based on the rules: divisible by 4, century year (divisible by 100), and not a century year (divisible by 400). The run output shows the program successfully identifies 2004 as a leap year.

```

package com.akash;
public class Main {
    public static void main(String[] args) {
        // year to be checked
        int year = 2004;
        boolean leap = false;

        // if the year is divided by 4
        if (year % 4 == 0) {

            // if the year is century
            if (year % 100 == 0) {

                // if year is divided by 400
                // then it is a leap year
                if (year % 400 == 0)
                    leap = true;
                else
                    leap = false;
            }
        }
    }
}

Run: Main x
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=54133:C:\Program Files\JetBrains\Int
2004 is a leap year.

Process finished with exit code 0

Build completed successfully in 1 sec, 954 ms (a minute ago)

```

The screenshot shows the IntelliJ IDEA interface with the same Java file Main.java open. The code is identical to the first screenshot. The run output shows the program successfully identifies 2003 as not a leap year.

```

package com.akash;
public class Main {
    public static void main(String[] args) {
        // year to be checked
        int year = 2003;
        boolean leap = false;

        // if the year is divided by 4
        if (year % 4 == 0) {

            // if the year is century
            if (year % 100 == 0) {

                // if year is divided by 400
                // then it is a leap year
                if (year % 400 == 0)
                    leap = true;
                else
                    leap = false;
            }
        }
    }
}

Run: Main x
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=54169:C:\Program Files\JetBrains\Int
2003 is not a leap year.

Process finished with exit code 0

Build completed successfully in 2 sec, 575 ms (moments ago)

```

## **5) Write a program in java to find fibonacci series**

**Ans)**

```
import java.util.*;  
  
public class Main {  
  
    public static void main(String[] args)  
    {  
        int a = 0, temp = 0, c = 1;  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter Number of terms");  
        int n = sc.nextInt();  
        for(int i = 1; i <= n; i++)  
        {  
            a = temp;  
            temp = c;  
            c = a + temp;  
            System.out.println(a);  
        }  
    }  
}
```

The screenshot shows the IntelliJ IDEA IDE interface. The top menu bar includes File, Edit, View, Navigate, Code, Refactor, Build, Run, Tools, VCS, Window, Help, and untitled4 - Main.java. The Project tool window on the left shows a single project named 'untitled4' with a 'src' folder containing a 'com.akash' package and a 'Main.java' file. The Main.java code is as follows:

```
package com.akash;
import java.util.*;
public class Main {
    public static void main(String[] args) {
        int a = 0, temp = 0, c = 1;
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter Number of terms");
        int n = sc.nextInt();
        for(int i = 1; i <= n; i++) {
            a = temp;
            temp = c;
            c = a + temp;
            System.out.println(a);
        }
    }
}
```

The Run tool window at the bottom shows the output of the program. It prompts "Enter Number of terms" and then lists the first four Fibonacci numbers: 0, 1, 1, 2. Below the output, it says "Process finished with exit code 0".

**1) Write a program in java to check number palindrome****Ans)**

```
import java.util.*;
public class Main
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number: ");
        int num=sc.nextInt();
        int r,sum=0;
        int temp=num;
        while(num>0)
        {
            r=num%10;
            sum=(sum*10)+r;
            num=num/10;
        }
        if(temp==sum)
            System.out.println("The entered number "+temp+" is a palindrome number ");
        else
            System.out.println("The entered number "+temp+" is not a palindrome");
    }
}
```

The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled3". The code editor displays a file named "Main.java" containing the following code:

```
package com.akash;
import java.util.*;
public class Main
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number: ");
        int num=sc.nextInt();
        int r,sum=0;
        int temp=num;
        while(num>0)
        {
            r=num%10;
            sum=(sum*10)+r;
            num=num/10;
        }
        if(temp==sum)
            System.out.println("The entered number "+temp+" is a palindrome number ");
    }
}
```

The run tab shows the output of the program:

```
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=54685:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8 Main
Enter the number:
55
The entered number 55 is a palindrome number
Process finished with exit code 0
```

The status bar at the bottom right indicates the build was completed successfully in 2 seconds, 70 ms (moments ago). The system tray shows the date and time as 1/24/2022 9:52 PM.

**2) Write a program in java to check string palindrome.**

**ANS)**

```
import java.util.*;
public class Main
{
    public static void main(String[] args)
    {
        //Take input from the user
        //Create instance of the Scanner class
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number: ");
        String reverse = "";
        String num = sc.nextLine();
        int length = num.length();
        for ( int i = length - 1; i >= 0; i-- )
            reverse = reverse + num.charAt(i);
        if (num.equals(reverse))
            System.out.println("The entered string " +num +" is a palindrome.");
        else
            System.out.println("The entered string " +num +" isn't a palindrome.");
    }
}
```

The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled3". The main editor window displays a file named "Main.java" containing the following code:

```
package com.akash;
import java.util.*;
public class Main
{
    public static void main(String[] args)
    {
        //Take input from the user
        //Create instance of the Scanner class
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number: ");
        String reverse = "";
        String num = sc.nextLine();
        int length = num.length();
        for ( int i = length - 1; i >= 0; i-- )
            reverse = reverse + num.charAt(i);
        if (num.equals(reverse))
            System.out.println("The entered string " +num +" is a palindrome.");
        else
            System.out.println("The entered string " +num +" isn't a palindrome.");
    }
}
```

The "Run" tool window at the bottom shows the output of the program. It prompts the user to enter a number, receives "10", and then prints "The entered string 10 isn't a palindrome." The status bar at the bottom right indicates the build was completed successfully in 2 seconds.

### 3) WAP in java to calculate factorial of a number using command line arguments.

ANS)

```
package com.akash;

class Main {
    public static void main(String[] args){
        int num=1;
        int n = 2;
        for(int i = 1; i<= n ; i++)
            num = num*i;
        System.out.println("factorial = " +num);
    }
}
```

The screenshot shows the IntelliJ IDEA interface with the following details:

- File Bar:** File, Edit, View, Navigate, Code, Refactor, Build, Run, Tools, VCS, Window, Help.
- Project Bar:** untitled4 / src / com / akash / Main
- Editor:** Main.java (Content of the code block above)
- Run Tab:** Shows the command used to run the program: "C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea\_rt.jar=63207:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin". The output shows "factorial = 2".
- Bottom Status Bar:** Build completed successfully in 3 sec, 577 ms (3 minutes ago). 13:1 CRLF UTF-8 4 spaces. Event Log. 9:30 PM 3/16/2022.

**1). The total distance travelled by a vehicle in t seconds is given by**

$$\text{distance} = ut + (at^2)/2.$$

**Write a program to evaluate the distance travelled at a regular interval of time, given the values of u and a (u is the initial velocity and a is the acceleration). The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of u and a.**

**ANS)**

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

```
public class Main
{
    public static void main(String[] args)
    {
        Scanner sc= new Scanner(System.in);
        System.out.print(" Enter the time taken: ");
        double t= sc.nextDouble();
        System.out.print(" Enter the initial velocity: ");
        double u= sc.nextDouble();
        System.out.print(" Enter the acceleration: ");
        double a= sc.nextDouble();
        double d= u*t+(0.5*a*t*t);

        System.out.println(" Distance travelled: "+d) ;

    }
}
```

The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled3". The code editor displays a Main.java file containing the following code:

```
package com.akash;
import java.util.*;
public class Main
{
    public static void main(String[] args)
    {
        Scanner sc= new Scanner(System.in);
        System.out.print(" Enter the time taken: ");
        double t= sc.nextDouble();
        System.out.print(" Enter the initial velocity: ");
        double u= sc.nextDouble();
        System.out.print(" Enter the acceleration: ");
        double a= sc.nextDouble();
        double d= u*t+(0.5*a*t*t);

        System.out.println(" Distance travelled: "+d);
    }
}
```

The "Run" tool window at the bottom shows the output of the program execution:

```
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=55787:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" Main
Enter the time taken: 10
Enter the initial velocity: 50
Enter the acceleration: 10
Distance travelled: 4375.0

Process finished with exit code 0
```

The status bar at the bottom right indicates the build completed successfully in 4 sec, 157 ms (a minute ago) at 10:08 PM on 1/24/2022.

## 2). Write a program that counts the even and odd numbers in a list of numbers using if...else statement.

**ANS)**

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

```
public class Main {
```

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

```
        Scanner reader = new Scanner(System.in);
```

```
        System.out.print("Enter a number: ");
```

```
        int num = reader.nextInt();
```

```
        if(num % 2 == 0)
```

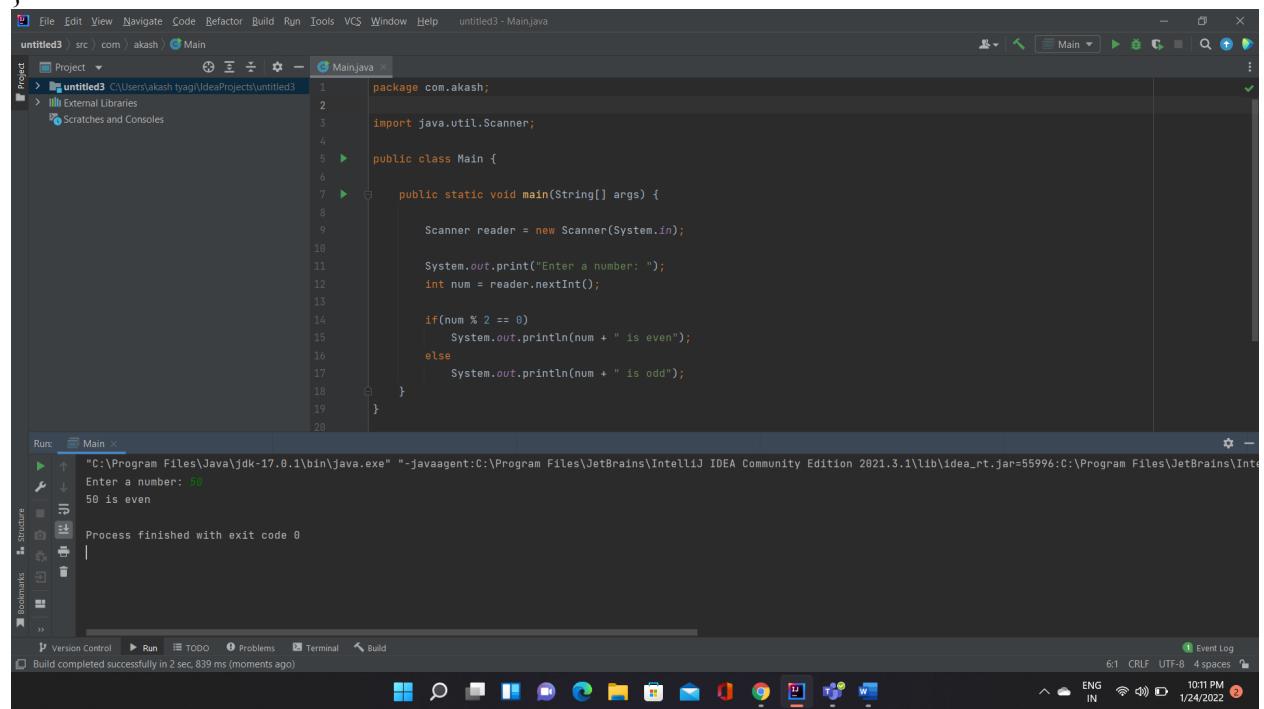
```
            System.out.println(num + " is even");
```

```
        else
```

```
            System.out.println(num + " is odd");
```

```
}
```

```
}
```



The screenshot shows the IntelliJ IDEA interface with the code editor displaying a Java file named Main.java. The code implements a simple program that reads an integer from the user and prints whether it is even or odd. The code editor has syntax highlighting for Java keywords and punctuation. Below the code editor is the 'Run' tool window, which shows the command used to run the application ("C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea\_rt.jar=55996:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin"), the input prompt ("Enter a number: 50"), the output ("50 is even"), and the message "Process finished with exit code 0". The bottom status bar shows the build time ("Build completed successfully in 2 sec 839 ms (moments ago)").

```
package com.akash;
import java.util.Scanner;
public class Main {
    public static void main(String[] args) {
        Scanner reader = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = reader.nextInt();
        if(num % 2 == 0)
            System.out.println(num + " is even");
        else
            System.out.println(num + " is odd");
    }
}
```

The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled3". The code editor displays a file named "Main.java" containing the following code:

```
package com.akash;
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner reader = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = reader.nextInt();
        if(num % 2 == 0)
            System.out.println(num + " is even");
        else
            System.out.println(num + " is odd");
    }
}
```

The run tab shows the output of the program:

```
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=56002:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin"
Enter a number: 29
29 is odd
Process finished with exit code 0
```

**3). Write a program to do the grading of students using the else if ladder and the switch ... case statement.**

### **Average marks Grade**

---

**80 -100 Honours**

**60-79 First Division**

**50-59 Second Division**

**40-49 Third Division**

**1-39 Fail**

**Also compute and print the number of students who have obtained the above marks.**

**ANS)**

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

```
public class Main
```

```
{
```

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

```
{
```

```
    Scanner sc = new Scanner(System.in);
```

```
    int marks;
```

```
    while(true)
```

```
{
```

```
        System.out.print("\nEnter The Marks Between 0 To 100:");
```

```
        System.out.print("\nEnter The Mark: ");
```

```
        marks = sc.nextInt();
```

```
switch(marks/10)
{
    case 10 :
        case 9 :
            System.out.print("\nYour Grade Is: A or Excellent");
            break;
    case 8 :
        case 7 :
            System.out.print("\nYour Grade Is: B or Very Good" );
            break;
    case 6 :
        System.out.print("\nYour Grade Is: C or Fair" );
        break;
    case 5 :
    case 4 :
        System.out.print("\nYour Grade Is: D or Pass");
        break;
    default :
        System.out.print("\nYou Grade Is: F or Fail\n");

    }
}
}
}
```

The screenshot shows the IntelliJ IDEA interface with a Java application running. The code in Main.java is:

```
package com.akash;
import java.util.*;
public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Enter The Marks Between 0 To 100:
        Enter The Mark: 88
        Your Grade Is: B or Very Good
        Enter The Marks Between 0 To 100:
        Enter The Mark: 55
        Your Grade Is: D or Pass
        Enter The Marks Between 0 To 100:
        Enter The Mark: 90
        Your Grade Is: A or Excellent
        Enter The Marks Between 0 To 100:
        Enter The Mark: 75
```

The application prompts the user for marks and prints the corresponding grade. The run configuration is set to "Main". The status bar at the bottom right shows the date and time.

**4). Write a program to find the number of and sum of all integers greater than 100 and less than 200 that are divisible by 7.**

**ANS)**

```
public class Main
{
    public static void main(String[] args) {
        // write your code here
        int i, sum=0;
        System.out.println("Numbers between 100 and 200, divisible by 7 : ");
        for(i=101;i<200;i++)
        {
            if(i%7==0)
            {
                System.out.println(i);
                sum+=i;
            }
        }
        System.out.println("The sum : "+sum);
    }
}
```

The screenshot shows the IntelliJ IDEA interface with a Java project named "untitled3". The code editor displays a file named "Main.java" containing the following code:

```
17 }  
18 }  
19 }  
20 }  
21 }  
22 }  
23 }
```

The run output window shows the following output:

```
Numbers between 100 and 200, divisible by 7 :  
105  
112  
119  
126  
133  
140  
147  
154  
161  
168  
175  
182  
189  
196  
The sum : 2107  
Process finished with exit code 0
```

The status bar at the bottom right indicates the build completed successfully in 2 seconds, 983 ms (moments ago). The system tray shows icons for battery, signal, and network.

5) WAP to read a set of numbers in an array & to find the sum and average of them

Ans

```
public class Main
{
    public static void main(String args[])
    {
        int sum=0;
        Scanner s=new Scanner(System.in);
        System.out.print("Enter The Size of the Array : ");
        int size=s.nextInt();
        int arr[]={};
        System.out.println("Enter the elements of Array");
        for(int i=0;i<arr.length;i++)
        {
            arr[i]=s.nextInt();
            sum+=arr[i];
        }
        float avg=(float)(sum/arr.length);
        System.out.println("Sum is "+sum+" Average is "+avg);
    }
}
```

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project Structure:** The project is named "untitled4" and contains a single source file "Main.java".
- Main.java Content:** The code is identical to the one provided in the text block.
- Run Tab:** The "Run" tab is selected, showing the command: "C:\Program Files\Java\jdk-17.0.1\bin\java.exe" -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea\_rt.jar=50248:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin".
- Output Window:** The output window shows the program's execution:
  - "Enter The Size of the Array : 4"
  - "Enter the elements of Array"
  - "2 3 7 4"
  - "Sum is 20 Average is 5.0"
  - "Process finished with exit code 0"
- Bottom Status Bar:** The status bar indicates "Build completed successfully in 3 sec, 415 ms (a minute ago)" and shows system information like "8:1 CRLF UTF-8 4 spaces", "ENG IN", and the date "3/20/2022".

6) Admission to a professional course is subject to the following conditions:

- a. Marks in Mathematics  $\geq 60$
- b. Marks in Physics  $\geq 50$
- c. Marks in Chemistry  $\geq 40$
- d. Total in all three subjects  $\geq 200$

or total in Mathematics and Physics  $\geq 150$

Given the marks in three subjects, write a program to process the applications to list the eligible candidates.

Ans)

```
package com.akash;

import java.util.Scanner;
public class Main {

    public static void main(String[] args) {
        int physics;
        int chemistry;
        int mathematics;
        int total;
        int total_math_phy;
        Scanner in = new Scanner (System.in);
        System.out.println("Enter marks for physics");
        physics = in.nextInt();
        System.out.println("Enter marks for chemistry");
        chemistry = in.nextInt();
        System.out.println("Enter marks for mathematics");
        mathematics = in.nextInt();
        total = physics + chemistry + mathematics;
        total_math_phy = physics + mathematics;

        if (((physics >= 50) && (chemistry >= 40) && (mathematics >= 60) &&
(total >= 20))
            || (total_math_phy >= 150)){
            System.out.println("The candidate is eligible");
        }
        else{
            System.out.println("The candidate is not eligible");
        }
    }
}
```

The screenshot shows the IntelliJ IDEA interface with a Java code editor and a terminal window.

**Code Editor:**

```
package com.akash;
import java.util.Scanner;
public class Main {
    public static void main(String[] args) {
        int physics;
        int chemistry;
        int mathematics;
        int total;
        int total_math_phy;
        Scanner in = new Scanner(System.in);
        System.out.println("Enter marks for physics");
        physics = in.nextInt();
        System.out.println("Enter marks for chemistry");
        chemistry = in.nextInt();
        System.out.println("Enter marks for mathematics");
        mathematics = in.nextInt();
        total = physics + chemistry + mathematics;
        total_math_phy = physics + chemistry;
        if ((total_math_phy >= 120) & (total >= 35)) {
            System.out.println("The candidate is eligible");
        } else {
            System.out.println("The candidate is not eligible");
        }
    }
}
```

**Terminal Output:**

```
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=50258:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8 Main
Enter marks for physics
#1
Enter marks for chemistry
#2
Enter marks for mathematics
#3
The candidate is eligible

Process finished with exit code 0
```

**System Tray:**

- Windows Start button
- Search icon
- Task View icon
- File Explorer icon
- OneDrive icon
- Power icon
- Network icon
- Volume icon
- Language icon: ENG IN
- Date and time: 7:29 PM 3/20/2022

7) : (A) Write a program to print this table

1  
2 3  
4 5 6  
7 8 9 10  
  
.  
.  
.  
  
79.....91

Ans)

```
package com.akash;

public class Main {
    public static void main(String[] args) {
        int i, j, k = 1;
        for (i = 1; i <= 13; i++) {
            for (j = 1; j < i + 1; j++) {
                System.out.print(k++ + " ");
            }
            System.out.println();
        }
    }
}
```

```

package com.akash;
public class Main {
    public static void main(String[] args) {
        int i, j, k = 1;
        for (i = 1; i <= 13; i++) {
            for (j = 1; j < i + 1; j++) {
                System.out.print(k++ + " ");
            }
            System.out.println();
        }
    }
}

```

The output window displays the following sequence of numbers:

```

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44 45
46 47 48 49 50 51 52 53 54 55
56 57 58 59 60 61 62 63 64 65 66
67 68 69 70 71 72 73 74 75 76 77 78
79 80 81 82 83 84 85 86 87 88 89 90 91

```

Process finished with exit code 0

**(B):** Modify the program to produce the following output

```

1
1
0 1
0 1 0 1
1 0 1 0 1

```

Ans)

```

package com.akash;

public class Main{
    public static void main(String[] args) {
        int n, p, q;

        n = 5;
        for (int i = 1; i <= n; i++)
        {
            if (i % 2 == 0)
                { p = 1; q = 0; }
            else
                { p = 0; q = 1; }
            for (int j = 1; j <= i; j++)
                if (j % 2 == 0)

```

```
        System.out.print(p);
    else
        System.out.print(q);
System.out.println();

    }
}

}

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help untitled4 - Main.java
untitled4 src com akash Main main
Project > untitled4 C:\Users\akash tyagn\IdeaProjects\untitled4
External Libraries
Scratches and Consoles

Main.java
2
3 public class Main{
4     public static void main(String[] args) {
5         int n, p, q;
6
7         n = 5;
8         for (int i = 1; i <= n; i++) {
9             if (i % 2 == 0)
10                 { p = 1; q = 0; }
11             else
12                 { p = 0; q = 1; }

Run: Main x
C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=50280:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8
1
01
101
0101
10101
Process finished with exit code 0

Structure
Build Events
Version Control Run TODO Problems Terminal Build
Build completed successfully in 2 sec, 708 ms (2 minutes ago)
12:18 CRLF UTF-8 4 spaces Event Log
ENG IN 8:07 PM 3/20/2022
```

- 8) Following is the code for printing a list of number using while loop. Modify the given code.

**Given Code:**

Class numberlist

```
{  
    Public static void main(String[] args)  
    {  
        Int i=1;  
        While(i>=10)  
        {  
            System.out.println(i);  
            i++;  
        }  
    }  
}
```

**Modified Code:**

```
package com.akash;  
  
public class Main{  
    public static void main(String[] args)  
    {  
        int i = 1;  
        while(i>=10)  
        {  
            System.out.println(i);  
            i++;  
        }  
    }  
}
```

The screenshot shows the IntelliJ IDEA Community Edition interface. The main window displays a Java file named Main.java with the following code:

```
package com.akash;
public class Main{
    public static void main(String[] args)
    {
        int i = 1;
        while(i<=10)
        {
            System.out.println(i);
            i++;
        }
    }
}
```

The code editor has syntax highlighting for Java keywords and comments. Below the editor, the 'Run' tool bar shows a successful run configuration for 'Main' with the command: "C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea\_rt.jar=50299:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin". The status bar at the bottom indicates a build completed successfully in 2 sec, 98 ms (moments ago) at 1422 CRLF UTF-8 4 spaces.

**9) Design a class in java to represent a bank account. include the following members:**

**Data members:**

1. name
2. account number
3. type
4. balance amount

**Methods:**

1. to assign initial values
2. to deposit an amount
3. to withdraw an amount after checking balance
4. to display the name and balance

Ans)

```
import java.util.*;  
  
public class Main {  
  
    int accno;  
    String name;  
    String acc_type;  
    double balance;  
    Scanner sc = new Scanner(System.in);  
  
    public void openAccount() {  
        System.out.print("Enter Account No: ");  
        accno = sc.nextInt();  
        System.out.print("Enter Account type: ");  
        acc_type = sc.next();  
        System.out.print("Enter Name: ");  
        name = sc.next();
```

```
System.out.print("Enter Balance: ");
balance = sc.nextDouble();
}

public void showAccount() {
    System.out.println("Name of account holder: " + name);
    System.out.println("Account no.: " + accno);
    System.out.println("Account type: " + acc_type);
    System.out.println("Balance: " + balance);
}

public void deposit() {
    long amt;
    System.out.println("Enter the amount you want to deposit: ");
    amt = sc.nextLong();
    balance = balance + amt;
}

public void withdrawal() {
    long amt;
    System.out.println("Enter the amount you want to withdraw: ");
    amt = sc.nextLong();
    if (balance >= amt) {
        balance = balance - amt;
        System.out.println("Balance after withdrawal: " + balance);
    } else {
        System.out.println("Your balance is less than " + amt + "\tTransaction failed...!!!");
    }
}

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

```

Main obj = new Main();
obj.openAccount();
obj.showAccount();
obj.deposit();
obj.withdrawal();
}
}

```

## **10) Calculate area of different geometrical figures (circles, rectangle, square, triangle) Using Function overloading.**

**Ans)**

```

package com.akash;

import java.util.Scanner;

public class Main
{
    int ar, len, bred;
    double areac, rad;
    void area(double radius)
    {
        rad=radius;
        areac=3.1416*rad*rad;
        System.out.println("Area of circle = "+areac);
    }
    void area(int length, int breadth)
    {
        len=length;
        bred=breadth;
        ar=len*bred;
        System.out.println("Area of Rectangle = "+ar);
    }
    void area(int side)
    {
        System.out.println("Area of Square = "+(side*side));
    }
    void area(int base, double height)
    {
        areac=(base*height)/2;

        System.out.println("Area of Triangle = "+areac);
    }

    public static void main(String[] args)
    {
        Main obj=new Main();
        obj.area(4.2);
    }
}

```

```
        obj.area(10, 20);
        obj.area(5);
        obj.area(12, 25.9);
    }

}

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help untitled4 - Main.java
untitled4 src com akash Main area
Project Project External Libraries Scratches and Consoles Main.java
18     len=length;
19     bred=breadth;
20     ar=len*bred;
21     System.out.println("Area of Rectangle = "+ar);
22 }
23 void area(int side)
24 {
25     System.out.println("Area of Square = "+(side*side));
26 }
27 void area(int base, double height)
28 {
29     areac=(base*height)/2;
30 }
31 System.out.println("Area of Triangle = "+areac);
32 }
33 public static void main(String[] args)
34 {
35 }
```

"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea\_rt.jar=51276:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8 Main

Area of circle = 55.417824  
Area of Rectangle = 200  
Area of Square = 25  
Area of Triangle = 155.39999999999998

Process finished with exit code 0

Structure Bookmarks Version Control Run TODO Problems Terminal Build Build completed successfully in 3 sec, 654 ms (moments ago) 32:6 CRLF UTF-8 4 spaces Event Log ENG IN 11:11 AM 3/27/2022

## 11) Write a program to implement array Index Out Of Bounds Exception and Arithmetic Exception.

**Ans)**

```
package com.akash;

import java.util.Scanner;

public class Main {

    public static void main(String[] args)
    {
        // write your code here
        Scanner sc = new Scanner(System.in);
        try{
            System.out.println("Enter 2 numbers");
            int a=sc.nextInt();
            int b= sc.nextInt();
            System.out.println("the division of 2 numbers :"+(a/b));
        }
        catch(Exception E)
        {
            System.out.println("Arithemetic Exception Error");
        }
    }
}
```

```
        }
        try {

            int arr[] = {1, 2, 3, 4, 5};
            System.out.println("Enter the element you want to excess");
            int n= sc.nextInt();
            System.out.println(arr[n]);
        }
        catch(Exception E)
        {
            System.out.println(E);
        }
    }
}

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help untitled4 - Main.java
untitled4 src com akash Main main
Main.java
Project External Libraries Scratches and Consoles
Run Main
"C:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\lib\idea_rt.jar=51295:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.1\bin" -Dfile.encoding=UTF-8
Enter 2 numbers
4 7
the division of 2 numbers :0
Enter the element you want to excess
4
java.lang.ArrayIndexOutOfBoundsException: Index 4 out of bounds for length 5

Process finished with exit code 0
Event Log
Build completed successfully in 2 sec, 710 ms (a minute ago)
2827 CRLF UTF-8 4 spaces
11:13 AM IN 3/27/2022
```

**12) Write a program to create an interface Area and implement the same in two different classes, Rectangle and Circle. Define a method compute to find the area of circle and rectangle**

**Ans)**