

**CS6308 – JAVA PROGRAMMING  
LAB EXPERIMENT – 1 &  
PRACTICE QUESTIONS**

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1. Write a program that takes as input fahrenheit temperature. It converts the Input temperature to celsius and prints out the converted temperature as shown In the example. The formula for conversion between the two is:  $c = 5/9(f - 32)$ , Where c is the temperature in celsius and f is the temperature in fahrenheit. Round your answer to up to two decimal places.

**CODE:**

```
import java.util.Scanner;

public class hems_lab_1 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("By HEMANTH N | 2019503519");

        System.out.println("Enter input in Fahrenheit\n");

        double c,f;

        f = in.nextDouble();

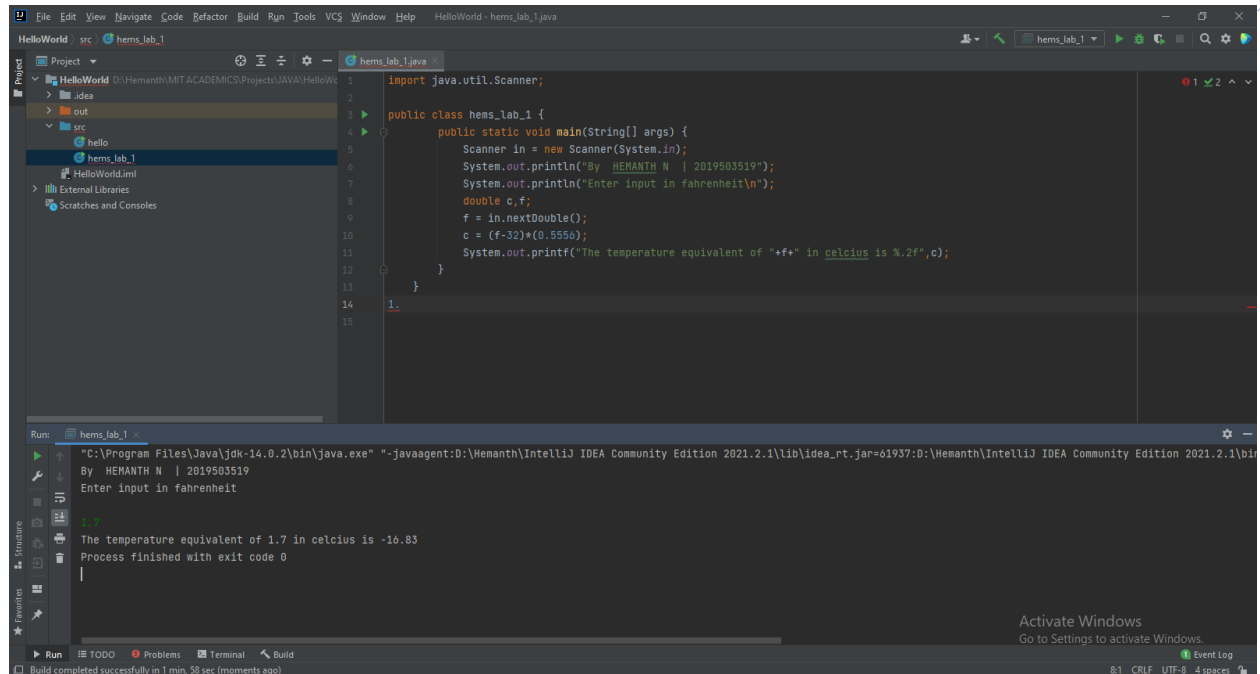
        c = (f-32)*(0.5556);

        System.out.printf("The temperature equivalent of "+f+" in Celsius is %.2f",c);

    }

}
```

**OUTPUT:**



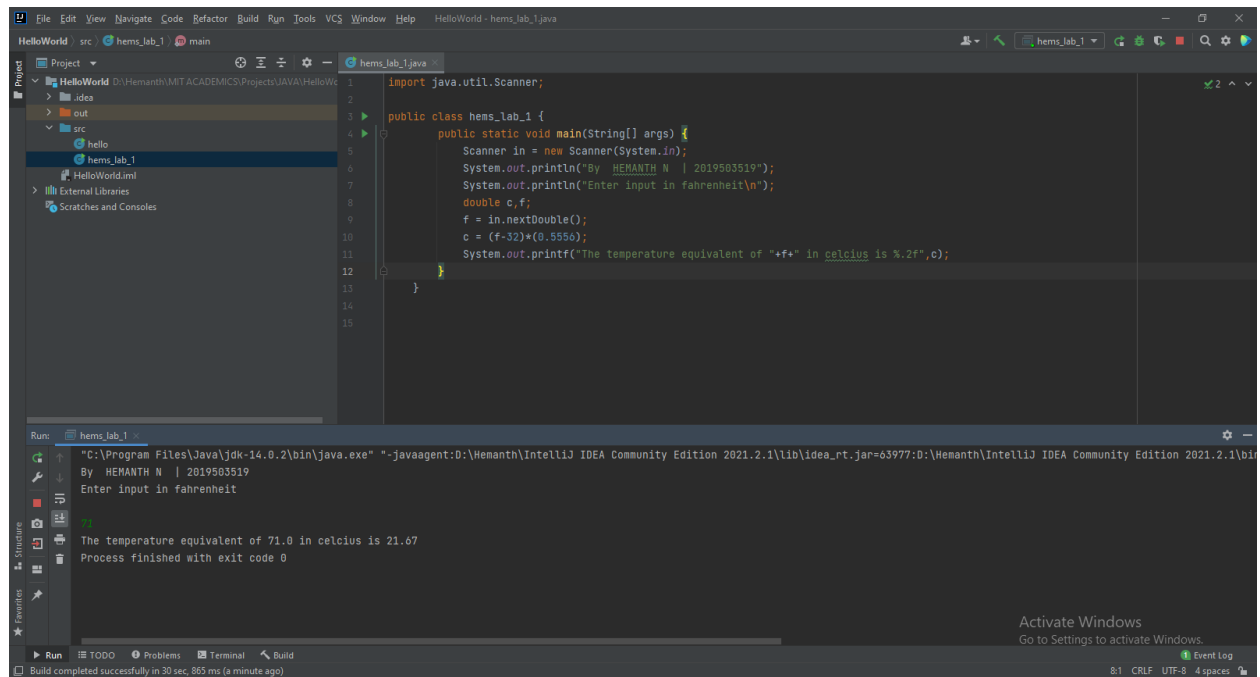
The screenshot shows the IntelliJ IDEA interface with a project named 'HelloWorld'. The source file 'hems\_lab\_1.java' is open, containing the following code:

```
1 import java.util.Scanner;
2
3
4 public class hems_lab_1 {
5     public static void main(String[] args) {
6         Scanner in = new Scanner(System.in);
7         System.out.println("By HEMANTH N | 2019503519");
8         System.out.println("Enter input in fahrenheit(n)");
9         double c,f;
10        f = in.nextDouble();
11        c = (f-32)*(0.5556);
12        System.out.printf("The temperature equivalent of "+f+" in celcius is %.2f",c);
13    }
14 }
15
```

The Run window shows the output of the program:

```
Run: hems_lab_1
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea_rt.jar=61937:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin"
By HEMANTH N | 2019503519
Enter input in fahrenheit
1.7
The temperature equivalent of 1.7 in celcius is -16.83
Process finished with exit code 0
```

Build completed successfully in 1 min 58 sec (moments ago).



The screenshot shows the IntelliJ IDEA interface with the same project 'HelloWorld'. The source file 'hems\_lab\_1.java' is open, containing the same code as the first screenshot:

```
1 import java.util.Scanner;
2
3
4 public class hems_lab_1 {
5     public static void main(String[] args) {
6         Scanner in = new Scanner(System.in);
7         System.out.println("By HEMANTH N | 2019503519");
8         System.out.println("Enter input in fahrenheit(n)");
9         double c,f;
10        f = in.nextDouble();
11        c = (f-32)*(0.5556);
12        System.out.printf("The temperature equivalent of "+f+" in celcius is %.2f",c);
13    }
14 }
15
```

The Run window shows the output of the program:

```
Run: hems_lab_1
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea_rt.jar=63977:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin"
By HEMANTH N | 2019503519
Enter input in fahrenheit
71.0
The temperature equivalent of 71.0 in celcius is 21.67
Process finished with exit code 0
```

Build completed successfully in 30 sec, 865 ms (a minute ago).

2. Write a program that takes as input three numbers, u, a, and t. Here u stands for the initial velocity, a stands for the acceleration, and t stands for the time duration. The program prints the final velocity (v).  $V = u + at$  recall that u and a can take any real (float) values as velocity and acceleration are continuous vector quantities (in physics). Time t can take non-negative real values only, i.e.,  $0 \leq t$ . note: round your answer to up to two decimal places.

**CODE:**

```
import java.util.*;

public class hems_lab_1_2 {

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("BY HEMANTH N 2019503519");
        double u,a,t,v;
        System.out.println("Enter initial velocity - ");
        u = in.nextDouble();
        System.out.println("Enter acceleration - ");
        a = in.nextDouble();
        System.out.println("Enter time duration - ");
        t = in.nextDouble();
        v = u + a*t;
        System.out.printf("The final velocity is %.2f",v);
    }
}
```

**OUTPUT:**

```

1  import java.util.*;
2  public class hems_lab_1_2 {
3
4      public static void main(String[] args) {
5          Scanner in = new Scanner(System.in);
6          System.out.println("BY HEMANTH N 2019503519");
7          double u,a,t,v;
8          System.out.println("Enter initial velocity - ");
9          u = in.nextDouble();
10         System.out.println("Enter acceleration - ");
11         a = in.nextDouble();
12         System.out.println("Enter time duration - ");
13         t = in.nextDouble();
14         v = u + a*t;
15         System.out.printf("The final velocity is %.2f",v);
16     }
17 }

```

Run: hems\_lab\_1\_2

```

"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea_rt.jar=60916:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin"
BY HEMANTH N 2019503519
Enter initial velocity -
10.0
Enter acceleration -
4.0
Enter time duration -
10.0
The final velocity is 49.25
Process finished with exit code 0

```

Build completed successfully in 10 sec, 73 ms (2 minutes ago)

- Write a program that takes as input three numbers,  $u$ ,  $a$ , and  $t$ . Here  $u$  stands for the initial velocity,  $a$  stands for the acceleration, and  $t$  stands for the time duration. The program prints the displacement covered ( $d$ ) in time  $t$ . Recall that  $u$  and  $a$  can take any real value as velocity and acceleration are continuous vectors (in physics). Time  $t$  can take non-negative real values only, i.e.,  $0 \leq t$ . note: round your answer to up to two decimal places.

### CODE:

```

import java.util.*;

public class hems_lab_1_3 {

    public static void main(String[] args)
    {

        Scanner in = new Scanner(System.in);

        System.out.println("BY HEMANTH N | 2019503519");

        double u,a,t,d;

```

```
System.out.println("Enter initial velocity - ");  
  
u = in.nextDouble();  
  
System.out.println("Enter acceleration - ");  
  
a = in.nextDouble();  
  
System.out.println("Enter time duration - ");  
  
t = in.nextDouble();  
  
d = u*t + 0.5*a*t*t;  
  
System.out.printf("The displacement is %.2f",d);  
  
}  
  
}
```

## OUTPUT:

```
import java.util.*;  
public class hems_lab_1_3 {  
    public static void main(String[] args)  
    {  
        Scanner in = new Scanner(System.in);  
        System.out.println("BY HEMANTH N | 2019503519");  
        double u,a,t,d;  
        System.out.println("Enter initial velocity - ");  
        u = in.nextDouble();  
        System.out.println("Enter acceleration - ");  
        a = in.nextDouble();  
        System.out.println("Enter time duration - ");  
        t = in.nextDouble();  
        d = u*t + 0.5*a*t*t;  
        System.out.printf("The displacement is %.2f",d);  
    }  
}
```

Run: hems\_lab\_1\_3

"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea\_rt.jar=65515:0:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin\java.exe" D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin\java.exe

BY HEMANTH N | 2019503519

Enter initial velocity -

Enter acceleration -

Enter time duration -

The displacement is 1737.25

Process finished with exit code 0

4. Write a program that takes as input an integer s, the number of seconds elapsed for a certain event. The program converts s to hours (hh), minutes (mm), and seconds (ss) and prints the output as hh:mm:ss.

**CODE:**

```
import java.util.*;

public class hems_lab_1_4 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("By HEMANTH N 2019503519");

        int s, hh, mm, ss;

        System.out.println("Enter number of seconds elapsed - ");

        s = in.nextInt();

        ss = s % 60;

        hh = s / 60;

        mm = hh % 60;

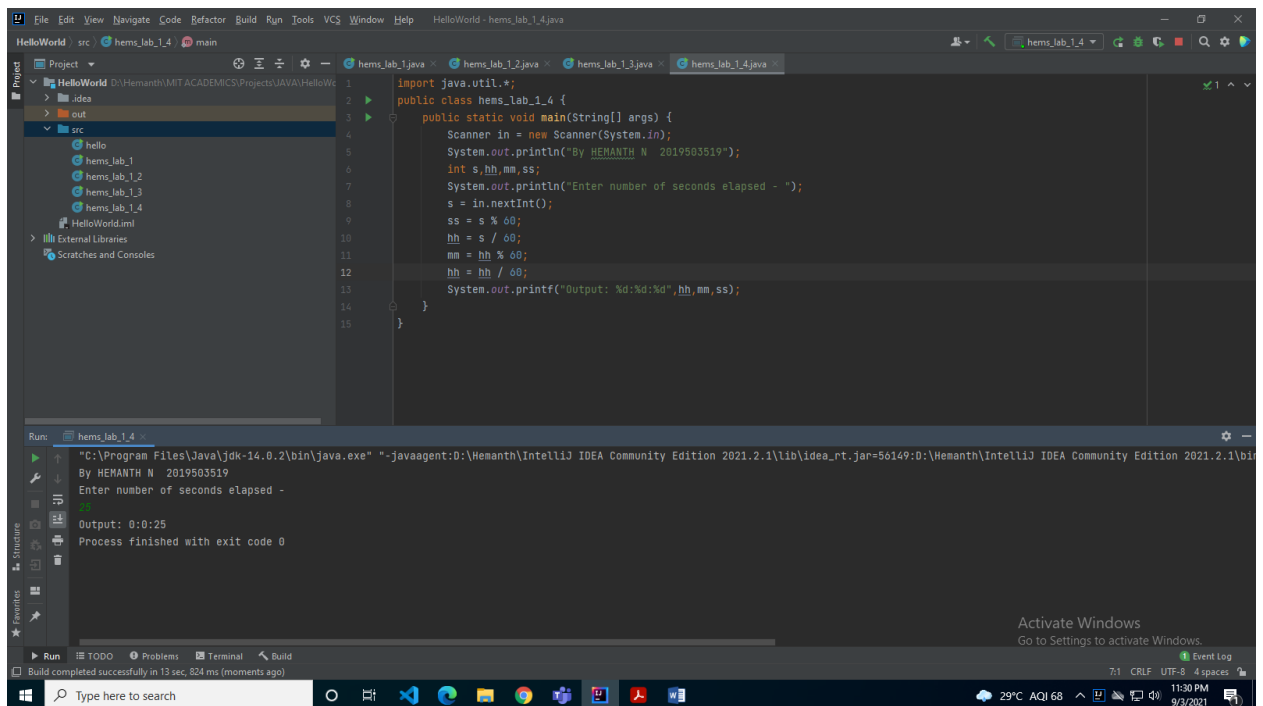
        hh = hh / 60;

        System.out.printf("Output: %d:%d:%d", hh, mm, ss);

    }

}
```

## OUTPUT:

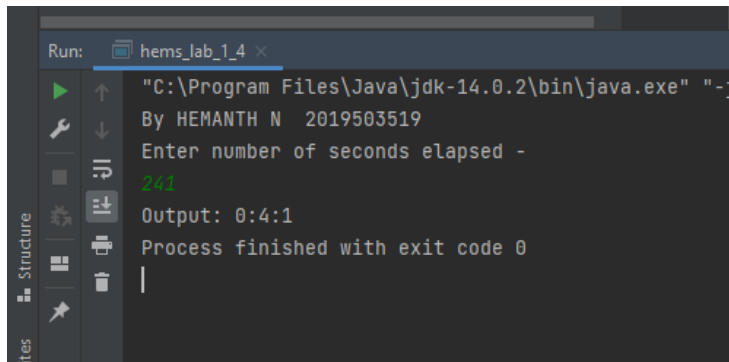


The screenshot shows the IntelliJ IDEA IDE with the project 'HelloWorld' open. The source code for 'hems\_lab\_1\_4.java' is displayed in the editor. The code imports 'java.util.\*' and defines a 'main' method that uses 'Scanner' to read input, calculate time in hours, minutes, and seconds, and print the output in HH:MM:SS format.

```
1 import java.util.*;
2 public class hems_lab_1_4 {
3     public static void main(String[] args) {
4         Scanner in = new Scanner(System.in);
5         System.out.println("By HEMANTH N 2019503519");
6         int s, hh, mm, ss;
7         System.out.println("Enter number of seconds elapsed - ");
8         s = in.nextInt();
9         ss = s % 60;
10        hh = s / 60;
11        mm = hh % 60;
12        hh = hh / 60;
13        System.out.printf("Output: %d:%d:%d", hh, mm, ss);
14    }
15 }
```

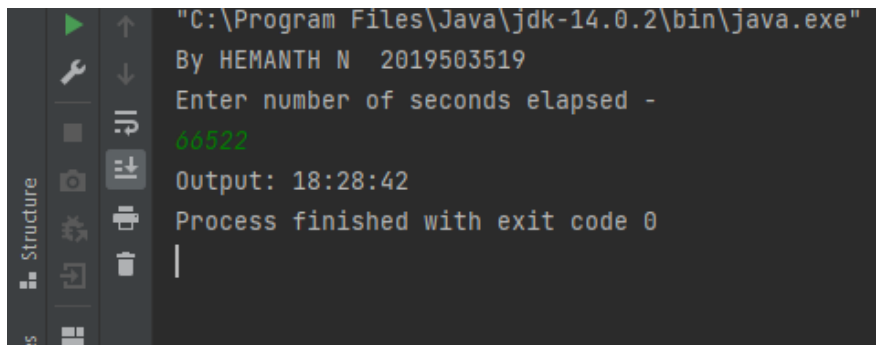
The Run window shows the execution output:

```
Run: hems_lab_1_4
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea_rt.jar=56149:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin"
By HEMANTH N 2019503519
Enter number of seconds elapsed -
Output: 0:0:25
Process finished with exit code 0
```



The Run window shows the execution output for 'hems\_lab\_1\_4':

```
Run: hems_lab_1_4
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-j
By HEMANTH N 2019503519
Enter number of seconds elapsed -
241
Output: 0:4:1
Process finished with exit code 0
```



The Run window shows the execution output for 'hems\_lab\_1\_4':

```
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe"
By HEMANTH N 2019503519
Enter number of seconds elapsed -
66522
Output: 18:28:42
Process finished with exit code 0
```



## **PRACTICE PROBLEMS**

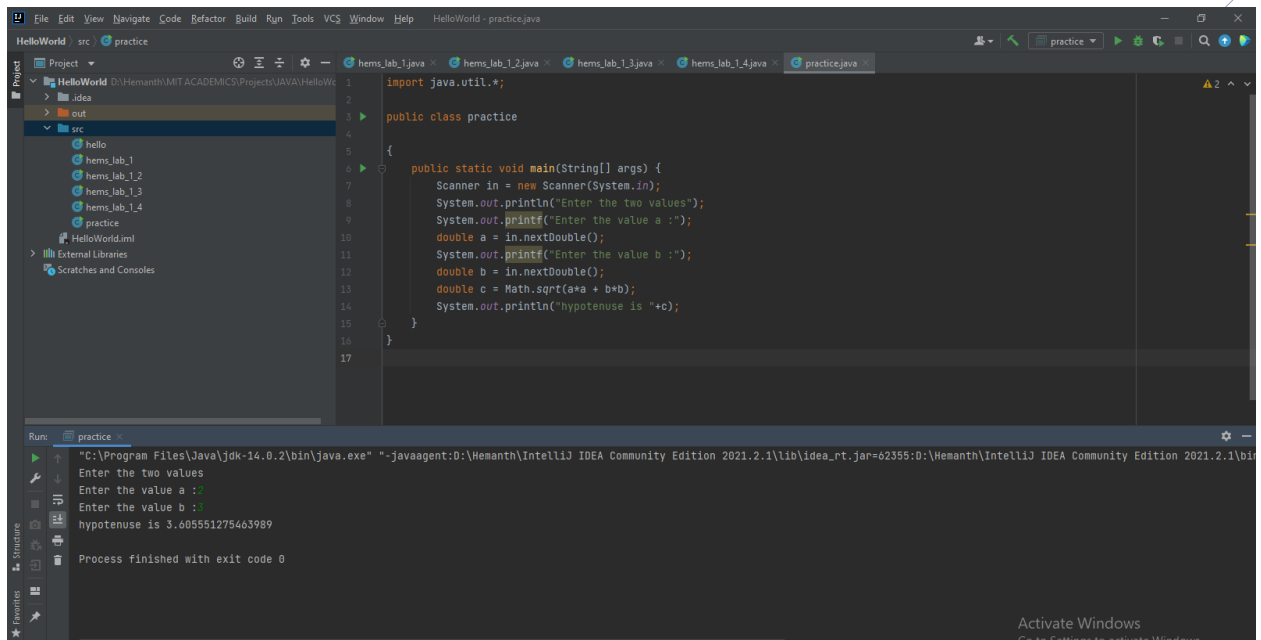
1. Finding the Hypotenuse of a triangle

### **CODE:**

```
import java.util.*;

public class practice
{
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the two values");
        System.out.printf("Enter the value a :");
        double a = in.nextDouble();
        System.out.printf("Enter the value b :");
        double b = in.nextDouble();
        double c = Math.sqrt(a*a + b*b);
        System.out.println("hypotenuse is "+c);
    }
}
```

### **OUTPUT:**



```
1 import java.util.*;
2
3 public class practice
4 {
5
6     public static void main(String[] args) {
7         Scanner in = new Scanner(System.in);
8         System.out.println("Enter the two values");
9         System.out.print("Enter the value a :");
10        double a = in.nextDouble();
11        System.out.print("Enter the value b :");
12        double b = in.nextDouble();
13        double c = Math.sqrt(a*a + b*b);
14        System.out.println("hypotenuse is "+c);
15    }
16 }
17
```

Run: practice

"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea\_rt.jar=62355:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin" -Didea.config.path=D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\config -Didea.system.path=D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\system -Didea.version=2021.2.1

Enter the two values

Enter the value a : 24

Enter the value b : 16

hypotenuse is 3.605551275463989

Process finished with exit code 0

## 2. Block of a scope

### CODE:

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

```
public class practice
```

```
{
```

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

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

```
        int x;
```

```
        x = 24;
```

```
        if(x == 24)
```

```
        {
```

```
            int y = 16;
```

```
System.out.printf("\nx and y inside If statement is x=%d and y=%d",x,y);

x = y * 2;

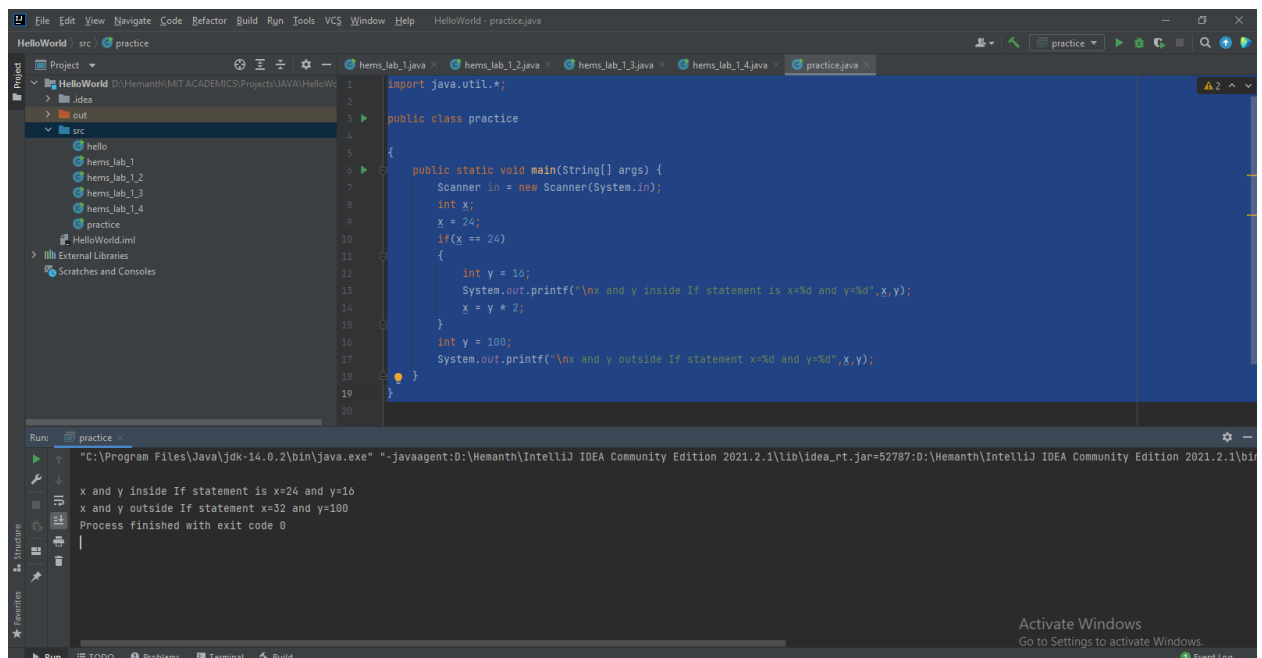
}

int y = 100;

System.out.printf("\nx and y outside If statement x=%d and y=%d",x,y);

}

}
```



The screenshot displays the IntelliJ IDEA IDE interface. The main editor window shows a Java file named `practice.java` with the following code:

```
1 import java.util.*;
2
3 public class practice
4 {
5
6     public static void main(String[] args) {
7         Scanner in = new Scanner(System.in);
8         int x;
9         x = 24;
10        if(x == 24)
11        {
12            int y = 10;
13            System.out.printf("\nx and y inside If statement is x=%d and y=%d",x,y);
14            x = y * 2;
15        }
16        int y = 100;
17        System.out.printf("\nx and y outside If statement x=%d and y=%d",x,y);
18    }
19 }
20
```

The Run window at the bottom shows the output of the program:

```
x and y inside If statement is x=24 and y=10
x and y outside If statement x=32 and y=100
Process finished with exit code 0
```

The Run window also displays the command used to execute the program: `"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\lib\idea_rt.jar=52787:D:\Hemanth\IntelliJ IDEA Community Edition 2021.2.1\bin"`.

### 3. Format the output example

**CODE:**

```
import java.util.*;

public class practice

{
    public static void main(String x[])
    {
        Scanner sc = new Scanner(System.in);
        float n = sc.nextFloat();
        int n1 = (int)n;
        float s = n - n1;
        int ans = (int)(s*100);
        System.out.println("First Two decimal places of "+n1+" is "+ans);
    }
}
```

```

1  import java.util.*;
2
3  public class practice
4  {
5
6      public static void main(String[] args)
7      {
8          Scanner sc = new Scanner(System.in);
9          float n = sc.nextFloat();
10         int n1 = (int)n;
11         float s = n - n1;
12         int ans = (int)(s*100);
13         System.out.println("First Two decimal places of " + n1 + " is " + ans);
14     }
15 }
16

```

Run: practice

```

C:\Program Files\Java\jdk-14.0.2\bin\java.exe "-javaagent:D:\Hemant\IntelliJ IDEA Community Edition 2021.2.1\lib\idea_rt.jar=52191:D:\Hemant\IntelliJ IDEA Community Edition 2021.2.1\bin"
First Two decimal places of 2 is 25
Process finished with exit code 0

```

#### 4. Printing the no of days in a month – Array

##### CODE:

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

```
public class practice
```

```
{
```

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

```
    {
```

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

```
        int days[] = {31,28,31,30,31,30,31,31,30,31,30,31};
```

```
        String months[] =
```

```
        {"January","February","March","April","May","June","July","August","September","October","November","December"};
```

```
        System.out.println("Months and days");  
  
        for(int i=0;i<12;i++)  
        {  
            System.out.println(months[i]+" has "+days[i]+" days");  
        }  
    }  
}
```

The screenshot shows an IDE window titled 'HelloWorld - practice.java'. The code editor displays the following Java code:

```
public class practice  
{  
    public static void main(String[] args)  
    {  
        Scanner in = new Scanner(System.in);  
        int days[] = {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};  
        String months[] =  
            {"January", "February", "March", "April", "May", "June", "July", "August", "September", "October", "November", "December"};  
        System.out.println("Months and days");  
        for(int i=0; i<12; i++)  
        {  
            System.out.println(months[i] + " has " + days[i] + " days");  
        }  
    }  
}
```

The Run console at the bottom shows the output of the program:

```
May has 31 days  
June has 30 days  
July has 31 days  
August has 31 days  
September has 30 days  
October has 31 days  
November has 30 days  
December has 31 days  
  
Process finished with exit code 0
```

The status bar at the bottom indicates 'Build completed successfully in 11 sec, 828 ms (moments ago)'.

5. Print a 2Dmatrix in n\*m and m\*n forms

**CODE:**

```
import java.util.*;

public class practice

{
    public static void main(String x[])
    {
        Scanner sc = new Scanner(System.in);
        int a[][]= new int[2][3];
        for(int i=0;i<2;i++)
            for(int j=0;j<3;j++)
                a[i][j]= sc.nextInt();
        for(int i=0;i<2;i++)
        {
            for(int j=0;j<3;j++)
                System.out.print(a[i][j]+" ");
            System.out.println();
        }
        System.out.println('\n');
        for(int i=0;i<3;i++)
        {
            for(int j=0;j<2;j++)
                System.out.print(a[j][i]+" ");
```

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

```
}
```

```
}
```

```
}
```

The screenshot shows an IDE window titled 'HelloWorld - practice.java'. The code is as follows:

```
7 {
8     Scanner sc = new Scanner(System.in);
9     int a[][]= new int[2][3];
10    for(int i=0;i<2;i++)
11        for(int j=0;j<3;j++)
12            a[i][j]= sc.nextInt();
13    for(int i=0;i<2;i++)
14    {
15        for(int j=0;j<3;j++)
16            System.out.print(a[i][j]+" ");
17        System.out.println();
18    }
19    System.out.println('\n');
20    for(int i=0;i<3;i++)
21    {
22        for(int j=0;j<2;j++)
23            System.out.print(a[j][i]+" ");
24        System.out.println();
25    }
26 }
```

The Run window shows the following output:

```
1 2 3
4 5 6

1 4
2 5
3 6
```

Process finished with exit code 0

Activate Windows  
Go to Settings to activate Windows.

Build completed successfully in 7 sec, 75 ms (moments ago)