

Week 2 - Level 3 - 10 Practice Problems

Q1) Write a TemperaturConversion program, given the temperature in Celsius as input outputs the temperature in Fahrenheit

Hint =>

- Create a **celsius** variable and take the temperature as user input
- Use the Formulae Celsius to Fahrenheit: $(^{\circ}\text{C} \times 9/5) + 32 = ^{\circ}\text{F}$ and assign to **fahrenheitResult** and print the result

I/P => celsius

O/P => The ____ celsius is ____ fahrenheit

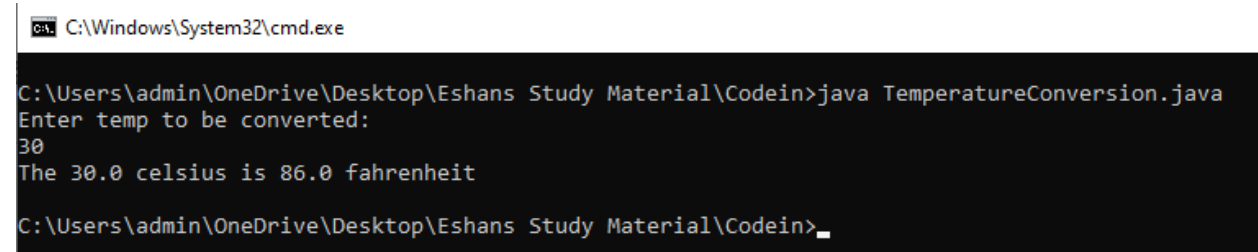
Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class TemperatureConversion{
    public static void main(String[] args){
        double celsius,fahrenheit;//declare variables
        Scanner myobj= new Scanner(System.in);//declare scanner object
        System.out.println("Enter temp to be converted:");//prompt user for input
        celsius=myobj.nextDouble();//store value in the variable
        fahrenheit= (celsius * 9.0/5.0) + 32 ;//Process conversion
        System.out.println("The "+celsius+" celsius is "+fahrenheit+" fahrenheit");//print
```

required entities

```
    }
}
```

Output Verification:



```
C:\Windows\System32\cmd.exe

C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java TemperatureConversion.java
Enter temp to be converted:
30
The 30.0 celsius is 86.0 fahrenheit

C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>_
```

Q2) Write a TemperaturConversion program, given the temperature in Fahrenheit as input outputs the temperature in Celsius

Hint =>

- Create a **fahrenheit** variable and take the user's input
- User the formulae to convert Fahrenheit to Celsius: $(^{\circ}\text{F} - 32) \times 5/9 = ^{\circ}\text{C}$ and assign the result to **celsiusResult** and print the result

I/P => fahrenheit

O/P => The ____ fahrenheit is ____ celsius

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class TemperatureConversionC{
    public static void main(String[] args){
        double celsius,fahreinheit;//declare variables
        Scanner myobj= new Scanner(System.in);//declare scaanner object
        System.out.println("Enter temp to be converted:");//prompt user for input
        celsius=myobj.nextDouble();//store value in the variable
        fahreinheit= celsius= (fahreinheit - 32) * 5.0/9.0 ;//Process conversion
        System.out.println("The "+celsius+" celsius is "+fahreinheit+" fahrenheit");//print
required entities
    }
}
```

Output Verification:

C:\Windows\System32\cmd.exe

```
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java TemperatureConversionC
Enter temp to be converted:
86
The 86.0 fahrenheit is 30.0 celsius
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>_
```

Q3) Create a program to find the total income of a person by taking salary and bonus from user

Hint =>

- Create a variable named salary and take user input.
- Create another variable bonus and take user input.
- Compute income by adding salary and bonus and print the result

I/P => salary, bonus

O/P => The salary is INR ____ and bonus is INR ____ . Hence Total Income is INR ____

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class TotSal{
    public static void main(String[] args){
        double sal,bonus,totsal;//declare variables
        Scanner myobj=new Scanner(System.in);//declare scanner object
        System.out.println("Enter salary and bonus:");//prompt user for input
        sal=myobj.nextDouble();//store value in variable
        bonus=myobj.nextDouble();//store value in variable
        totsalsal=bonus;//compute the total salary
        System.out.println("The salary is INR "+sal+" and bonus is INR . "+bonus+"
Hence Total Income is INR "+totsal);//print the required entities
    }
}
```

Output Verification:

```
C:\Windows\System32\cmd.exe
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java TotSal
Enter salary and bonus:
1800000
10000
The salary is INR 1800000.0 and bonus is INR . 10000.0 Hence Total Income is INR 1810000.0
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>
```

Q4) Create a program to swap two numbers

Hint =>

- Create a variable number1 and take user input.
- Create a variable number2 and take user input.
- Swap number1 and number2 and print the swapped output

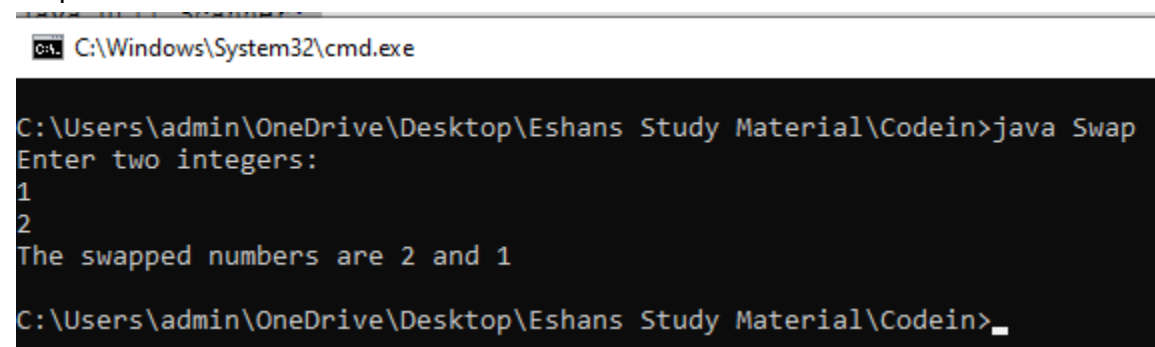
I/P => number1, number2

O/P => The swapped numbers are ____ and ____

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Swap{
    public static void main(String[] args){
        int num1,num2,temp;//declare variables
        Scanner myobj=new Scanner(System.in);//create scanner object
        System.out.println("Enter two integers:");//prompt user for input
        num1=myobj.nextInt();//store value in variable
        num2=myobj.nextInt();//store value in variable
        temp=num2;//perform swap
        num2=num1;//perform swap
        num1=temp;//perform swap
        System.out.println("The swapped numbers are "+num1+" and "+num2);//print swapped
        numbers
    }
}
```

Output Verification:



The screenshot shows a Windows command prompt window with the title bar "C:\Windows\System32\cmd.exe". The command prompt displays the following text:

```
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java Swap
Enter two integers:
1
2
The swapped numbers are 2 and 1
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>_
```

Q5) Rewrite the Sample Program 2 with user inputs

Hint =>

- Create variables and take user inputs for name, fromCity, viaCity, toCity
- Create variables and take user inputs for distances fromToVia and viaToFinalCity in Miles
- Create Variables and take time taken
- Finally, print the result and try to understand operator precedence.

I/P => fee, discountPrecent

O/P => The results of Int Operations are ____, ____, and ____

Ans) Code:

```
import java.util.Scanner; // Import Scanner class
class TravelComputation {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in); // Create Scanner object
        // prompt user for input
        System.out.print("Enter your name: ");
        String name = scanner.nextLine(); // read user's name
        System.out.print("Enter From City: ");
        String fromCity = scanner.nextLine(); // read beginning city
        System.out.print("Enter Via City: ");
        String viaCity = scanner.nextLine(); // read via city
        System.out.print("Enter To City: ");
        String toCity = scanner.nextLine(); // read to city
        System.out.print("Enter distance from " + fromCity + " to " + viaCity + " (in miles): ");
        double distanceFromToVia = scanner.nextDouble(); // Read distance between fromCity to
viaCity
        System.out.print("Enter time taken from " + fromCity + " to " + viaCity + " (in minutes): ");
        int timeFromToVia = scanner.nextInt(); // Read travel time from fromCity to viaCity in
minutes
        System.out.print("Enter distance from " + viaCity + " to " + toCity + " (in miles): ");
        double distanceViaToFinalCity = scanner.nextDouble(); // Read distance between viaCity to
toCity
        System.out.print("Enter time taken from " + viaCity + " to " + toCity + " (in minutes): ");
        int timeViaToFinalCity = scanner.nextInt(); // Read travel time from viaCity to toCity in
minutes
        double totalDistance = distanceFromToVia + distanceViaToFinalCity; // Calculate total
travel distance
        int totalTime = timeFromToVia + timeViaToFinalCity; // Calculate total travel time in minutes
        System.out.println("The Total Distance travelled by " + name + " from " + fromCity + " to " +
toCity + " via " + viaCity + " is " + totalDistance + " miles and the Total Time taken is " + totalTime
+ " minutes."); // print required entities
    }
}
```

Output Verification:

```
C:\Windows\System32\cmd.exe

C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java TravelComputation
Enter your name: e
Enter From City: s
Enter Via City: d
Enter To City: f
Enter distance from s to d (in miles): 58
Enter time taken from s to d (in minutes): 68
Enter distance from d to f (in miles): 28
Enter time taken from d to f (in minutes): 48
The Total Distance travelled by e from s to f via d is 86.0 miles and the Total Time taken is 116 minutes.

C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>
```

Q6) An athlete runs in a triangular park with sides provided as input by the user in meters. If the athlete wants to complete a 5 km run, then how many rounds must the athlete complete

Hint => The perimeter of a triangle is the addition of all sides and rounds is distance/perimeter

I/P => side1, side2, side3

O/P => The total number of rounds the athlete will run is ____ to complete 5 km

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Rounds{
    public static void main(String[] args){
        int side1, side2, side3,dist=5000,perimeter;//declare required variables and
assign values
        int round;
        Scanner myobj=new Scanner(System.in);//declare a scanner object
        System.out.println("Enter side1, side2, side3:");//prompt user for input
        side1=myobj.nextInt();//assign values to variables
        side2=myobj.nextInt();//assign values to variables
        side3=myobj.nextInt();//assign values to variables
        perimeter=side1+side2+side3;//calculate perimeter
        round=dist/perimeter;//calculate no of rounds
        System.out.println("The total number of rounds the athlete will run is "+round+" to
complete 5 km");//print required entities
    }
}
```

Output Verification:

```
C:\Windows\System32\cmd.exe

C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java Rounds
Enter side1, side2, side3:
1
2
3
The total number of rounds the athlete will run is 833 to complete 5 km
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>
```

Q7) Create a program to divide N number of chocolates among M children.

Hint =>

- Get an integer value from user for the numberOfchocolates and numberOfChildren.
- Find the number of chocolates each child gets and number of remaining chocolates
- Display the results


I/P => numberOfchocolates, numberOfChildren

O/P => The number of chocolates each child gets is ____ and the number of remaining chocolates are ____

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Choc{
    public static void main(String[] args){
        int n,m,choc,rem;//declare required variables
        Scanner myobj=new Scanner(System.in);//declare scanner object
        System.out.println("Enter no of chocolates and children: ");//prompt user for input
        n=myobj.nextInt();//assign values to variables
        m=myobj.nextInt();//assign values to variables
        choc=n/m;//calculate no of chocolates distributed
        rem=n%m;//calculate remaining chocolates
        System.out.println("The number of chocolates each child gets is "+choc+" and
the number of remaining chocolates are "+rem);//print required entities
    }
}
```

Output Verification:

 C:\Windows\System32\cmd.exe

```
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java Choc
Enter no of chocolates and children:
8
5
The number of chocolates each child gets is 1 and the number of remaining chocolates are 3
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>_
```

Q8) Write a program to input the Principal, Rate, and Time values and calculate Simple Interest.

Hint => Simple Interest = Principal * Rate * Time / 100


I/P => principal, rate, time

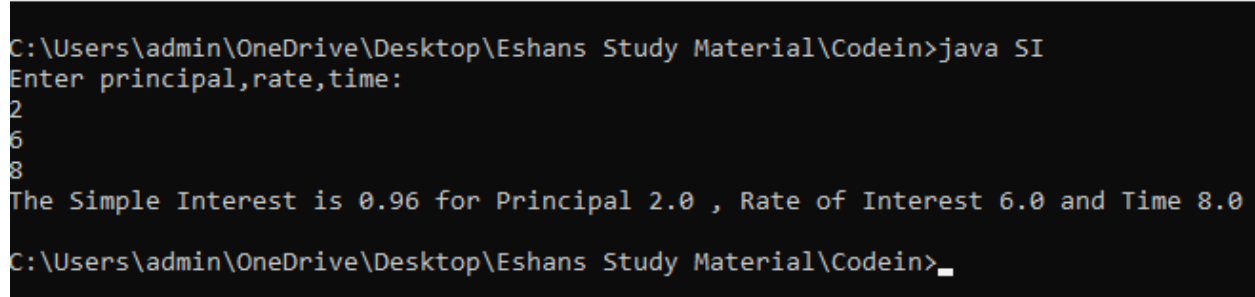
O/P => The Simple Interest is ____ for Principal ____, Rate of Interest ____ and Time ____

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class SI{
    public static void main(String[] args){
        double time,principal,rate,interest;//declare required variables
        Scanner myobj=new Scanner(System.in);//declare scanner object
        System.out.println("Enter principal,rate,time:");//prompt user for input
        principal=myobj.nextDouble();//assign values to variables
        rate=myobj.nextDouble();
        time=myobj.nextDouble();//assign value to variables
        interest=principal*rate*time/100;//assign values to variables
        System.out.println("The Simple Interest is "+interest+" for Principal "+principal+" ,
Rate of Interest "+rate+" and Time "+time);//print required entities
    }
}
```

Output Verification:

 C:\Windows\System32\cmd.exe



```
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java SI
Enter principal,rate,time:
2
6
8
The Simple Interest is 0.96 for Principal 2.0 , Rate of Interest 6.0 and Time 8.0
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>_
```


Q9) Create a program to find the maximum number of handshakes among N number of students.


Hint =>

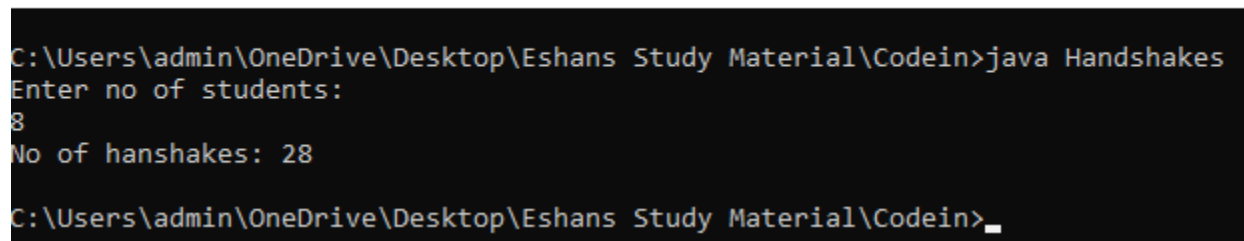
- Get integer input for numberOfStudents variable.
- Use the combination = $(n * (n - 1)) / 2$ formula to calculate the maximum number of possible handshakes.
- Display the number of possible handshakes.

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Handshakes{
    public static void main(String[] args){
        int n,handshake;//declare required variables
        Scanner myobj=new Scanner(System.in);//declare scanner object
        System.out.println("Enter no of students:");//prompt user for input
        n=myobj.nextInt();//assign values to variables
        handshake=(n * (n - 1)) / 2;//perform required operation
        System.out.println("No of hanshakes: "+handshake);//print required entity
    }
}
```

Output Verification:

 C:\Windows\System32\cmd.exe



```
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java Handshakes
Enter no of students:
8
No of hanshakes: 28
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>_
```

Q10) Create a program to convert weight in pounds to kilograms.

Hint => 1 pound = 2.2 kg


I/P => weight

O/P => The weight of the person in pound is ____ and in kg is ____

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class WtConvers{
    public static void main(String[] args){
        double Wt,kg;//declare required variables
        Scanner myobj=new Scanner(System.in);//declare scanner object
        System.out.println("Enter weight in pounds:");//prompt user for input
        Wt=myobj.nextDouble();//assign value to variable
        kg=Wt/2.2;//convert pounds to kg
        System.out.println("The weight of the person in pounds is "+Wt+" and in kg is "+kg);//print required entities
    }
}
```

Output Conversion:

 C:\Windows\System32\cmd.exe

```
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>java WtConvers
Enter weight in pounds:
22
The weight of the person in pounds is 22.0 and in kg is 10.0
C:\Users\admin\OneDrive\Desktop\Eshans Study Material\Codein>
```