Practice problem (1)

```java
import java.util.Scanner;

public class ComputeAreaWithConsoleInput {
    public static void main (String[] args){
        Scanner input = new Scanner (System.in);
        System.out.print("Enter a number for radius: ");
        double radius=input.nextDouble();
        double area=radius*radius*3.14159;
        System.out.println("The area for the circle of radius " + radius +" is " + area);
    }
}
```

OUTPUT

```
Enter a number for radius: 23
The area for the circle of radius 23.0 is 1661.90111
BUILD SUCCESSFUL (total time: 4 seconds)
```

Practice problem (2)

```java
import java.util.Scanner;

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

        System.out.print("Enter annual interest rate, e.g., 7.25% :");

        double annualInterestRate = input.nextDouble();

        double monthlyInterestRate = annualInterestRate / 1200;

        System.out.print("Enter number of years as an integer, e.g., 5 :");
        int numberOfYears = input.nextInt();
        System.out.print("Enter loan amount, e.g., 120000.95: ");
        double loanAmount = input.nextDouble();
        double monthlyPayment = loanAmount * monthlyInterestRate / (1 - 1 / Math.pow(1 + monthlyInterestRate, numberOfYears * 12));
        double totalPayment = monthlyPayment * numberOfYears * 12;
        System.out.println("The monthly payment is $" + (int) (monthlyPayment * 100) / 100.0);
        System.out.println("The total payment is $" + (int)(totalPayment * 100) / 100.0);
    }
}
```

OUTPUT

```
Enter annual interest rate, e.g., 7.25% :5.75
Enter number of years as an integer, e.g., 5 :15
Enter loan amount, e.g., 120000.95: 250000
The monthly payment is $2076.02
The total payment is $373684.53
BUILD SUCCESSFUL (total time: 22 seconds)
```

Practice problem (3)

```java
import java.util.Scanner;

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

        System.out.print("Enter weight in pounds :");
        double weight = input.nextDouble();
        System.out.print("Enter hight in inches :");
        double height = input.nextDouble();

        final double KILOGRAMS_PER_POUND = 0.45359237;
        final double METERS_PER_INCH = 0.0254;

        double weightInKilograms = weight * KILOGRAMS_PER_POUND;
        double heightInMeters = height * METERS_PER_INCH;
        double bmi = weightInKilograms /(heightInMeters * heightInMeters);
        System.out.println("BMI is " + bmi);
        if (bmi<18.5)
            System.out.println("Underweight");
        else if (bmi<25)
            System.out.println("Normal");
        else if (bmi <30)
            System.out.println("Overweight");
        else
            System.out.println("Obese");
    }
}
```

OUTPUT

```
Enter weight in pounds :150
Enter hight in inches :190
BMI is 2.921341743653017
Underweight
```

Practice problem (4)

```java
import java.util.Scanner;

public class ComputeTax {
    public static void main (String[] args){
        Scanner input = new Scanner(System.in);
        System.out.print("(0-single filer, 1-married jointly or "
        +"qualifying widow(er), 2-married separately, 3-head of" +"household) Enter the filing status: ");
        int status = input.nextInt();
        System.out.print("Enter the taxable income: ");
        double income= input.nextDouble();
        double tax =0;
        if (status ==0){
            if (income<=8350)
                tax= income * 0.10;
            else if (income <=33950)
                tax = 8350*0.10+(income - 8350)*0.15;
            else if (income <=82250)
                tax= 8350*0.10+(33950-8350)*0.15+(income -33950)* 0.25;
            else if (income <= 171550)
                tax = 8350 * 0.10 + (33950 - 8350)*0.15 + (82250 - 33950)*0.25+(income-82250)*0.28;
            else if (income<= 372950)
                tax= 8350*0.10+(33950-8350)*0.15+(82250-33950)*0.25+(171550-82250)*0.28+(income-171550)*0.33;
            else
                tax=8350*0.10+(33950-8350)*0.15+(82250-33950)*0.25+(171550-82250)*0.28+(372950-171550)*0.33+(income-372950)*0.35;
        }
        else if (status==1){

        }
            else if (status==2){

            }
            else if (status==3){

            }
            else {
                System.out.println("Error: invald status");
                System.exit(1);
            }
            System.out.println("Tax is "+(int)(tax*100)/100.0);
        }
    }
```

OUTPUT

```
(0-single filer, 1-married jointly or qualifying widow(er), 2-married separately, 3-head ofhousehold) Enter the filing status: 0
Enter the taxable income: 400000
Tax is 117683.5
BUILD SUCCESSFUL (total time: 13 seconds)
```

Practice problem (5)

```java
import java.util.Scanner;

public class ChineseZodiac {
    public static void main (String[] args){
        Scanner input =  new Scanner(System.in);
        System.out.print("Enter a year: ");
        int year = input.nextInt();

        switch (year % 12){
            case 0:
                System.out.println("monkey"); break;
            case 1:
                System.out.println("rooster"); break;
            case 2:
                System.out.println("dog"); break;
                case 3:
                System.out.println("pig"); break;
                case 4:
                System.out.println("rat"); break;
            case 5:
                System.out.println("ox"); break;
```

```
            case 6:
                System.out.println("tiger"); break;
            case 7:
                System.out.println("rabbit"); break;
            case 8:
                System.out.println("dragon"); break;
            case 9:
                System.out.println("snake"); break;
            case 10:
                System.out.println("horse"); break;
            case 11:
                System.out.println("sheep");
        }
    }
}
```

OUTPUT

```
Enter a year: 1877
ox
BUILD SUCCESSFUL (total time: 4 seconds)
```

Practice problem (6)

```java
import java.util.Scanner;

public class ComputeAngles {
    public static void main (String[] args){
        Scanner input = new Scanner(System.in);
        System.out.print("Enter three points:");
        double x1 = input.nextDouble();
        double y1 = input.nextDouble();
        double x2 = input.nextDouble();
        double y2 = input.nextDouble();
        double x3 = input.nextDouble();
        double y3 = input.nextDouble();

        double a= Math.sqrt((x2-x3)*(x2-x3)+ (y2-y3)*(y2-y3));
        double b= Math.sqrt ((x1-x3)*(x1-x3)+(y1-y3)*(y1-y3));
        double c= Math.sqrt ((x1-x2)*(x1-x2)+(y1-y2)*(y1-y2));
        double A= Math.toDegrees(Math.acos((a*a-b*b-c*c)/(-2*b*c)));
        double B= Math.toDegrees(Math.acos((b*b-a*a-c*c)/(-2*a*c)));
        double C= Math.toDegrees(Math.acos((c*c-b*b-a*a)/(-2*a*b)));
        System.out.println("The three angles are "+Math.round(A*100)/100.0+ " "+

                Math.round (B*100)/100.0 +" "+
                Math.round (C*100)/100.0);
    }
}
```

OUTPUT

```
Enter three points:1 1 6.5 1 6.5 2.5
The three angles are 15.26 90.0 74.74
BUILD SUCCESSFUL (total time: 12 seconds)
```

Practice problem (7)

```java
import java.util.Scanner;

public class LotteryUsingStrings {
    public static void main (String[] args){
        String lottery = "" +(int) (Math.random()*10) + (int) (Math.random()*10);
        Scanner input = new Scanner (System.in);
        System.out.print("Enter your lottery pick (two digits): ");
        String guess = input.nextLine();

        char lotteryDigit1= lottery.charAt(0);
        char lotteryDigit2= lottery.charAt(1);

        char guessDigit1= guess.charAt(0);
        char guessDigit2= guess.charAt(1);

        System.out.println("The lottery number is "+ lottery);

        if (guess.equals(lottery))
            System.out.println("Exact match : you win $10,000");
        else if (guessDigit2== lotteryDigit1 && guessDigit1== lotteryDigit2)
            System.out.println("Match all digits : you win $3,000");
        else if (guessDigit1==lotteryDigit1
                || guessDigit1== lotteryDigit2
                || guessDigit2== lotteryDigit1
                || guessDigit2== lotteryDigit2)
            System.out.println("Match one digit : you win $1,000");
        else
            System.out.println("Sorry, no match");


    }
}
```

OUTPUT

```
Enter your lottery pick (two digits): 14
The lottery number is 97
Sorry, no match
```