



# Practice Implementing Modular Programming Using Functions



## Practice Exercises

- Practice 1 : Fencing a Barn
- Practice 2 : Weighted Average

## PRACTICE 1

### Practice 1: Fencing a Barn

Ron wishes to renovate his barn. He thinks that creating fences and keeping the animals separate will help him feed the animals more easily and prevent them from getting mixed.

For this, he plans to divide the area into three parts. He wishes to have a square area for the chickens, a circular area for the ducks, and a rectangular area for the cows.

Write a program to help Ron calculate the area of each fence.

Note: Steps to do this practice are given in the upcoming slide.



# Practice 1: Tasks

- Create a Java class and name it as **AreaCalculator**.
- Use the Scanner to take input from the user for calculating the area of the square, circle, and rectangle.
- Write the logic for the following methods:
  - `public double calculateAreaOfSquare(double side)` - To calculate the area of the square and return its value
  - `public double calculateAreaOfCircle(double radius)` - To calculate the area of the circle and return its value
  - `double calculateAreaOfRectangle(double length, double breadth)` - To calculate the area of the rectangle and return its value
- Write the main method to call the above methods and display the output.

# Input and Output: 1

## Sample Input

12

10

10

10

## Expected Output

Note that the output must contain the below lines in the same format

Square Area 144.0

Circle Area 314.0

Rectangle Area 100.0

## PRACTICE

### Practice 2: Weighted Average

The placement team of an engineering college needs to select eligible candidates for campus placement. To do so they require individual, weighted average scores of the students.

Write a program to calculate the weighted average for individual students.



## Practice 2: Tasks

- The percentage value assigned for each of the different types of assessments conducted is listed below:

Sl. No	Assessment Type	Percentage
1	Assignments	10
2	Projects	35
3	Quiz	10
4	Mid Term Evaluation	15
5	Final exams	30

- Write a program that calculates the weighted average score and displays the weighted average score of the student.



## Practice 2: Tasks (cont'd)

- Create a Java class named **WeightedAverage**.
- Create the method `calculateWeightedAverage()`, use a scanner to take the following input from the user for which the values are provided in the table, and write the logic used to calculate the Weighted Average.
- Write the main method and call the above method from the main method.

Variables	Values
assignmentWeight	10
projectWeight	35
quizWeight	10
midTermWeight	15
finalExamWeight	30

Variables	Values
assignmentScore	97
projectScore	82
quizScore	60
midTermScore	75
finalExamScore	80

- Scores of the student are the marks they scored out of 100.



## Practice 2: Tasks (cont'd)

- Calculate the individual weights of all the scores and store them in variables. For example, calculate the weighted score for assignments using the given formula.

```
assignmentPercentageScore = (assignmentWeight/100.0f) * assignmentScore
```

- Similarly, calculate the weighted score for all the weights.

## Practice 2: Tasks (cont'd)

- Calculate the overall weighted percentage and store it in a variable as shown below.

```
overallPercentage = assignmentPercentageScore + projectPercentageScore +  
                    quizPercentageScore + midTermPercentageScore +  
                    finalExamPercentageScore;
```

- Display the details in the given format.

```
Weights      % Value of score  
Assignments  9.7  
Projects     28.699999  
Quizzes      6.0  
Mid term     11.25  
Final Exam   24.0  
  
The weighted average score is 79.649994%
```

# Input: 1

## Sample Input

10  
35  
10  
15  
30  
97  
82  
60  
75  
80

## Expected Output

Note that the output must contain the below lines in the same format

# Output: 1

- **Expected Output**

Note that the output must contain the below lines in the same format.

```
Weights  % Value of score
```

```
Assignments 9.7
```

```
Projects 28.699999
```

```
Quizzes 6.0
```

```
Mid term 11.25
```

```
Final Exam 24.0
```

```
The weighted average score is 79.649994%
```