

C-DAC Mumbai

Lab Assignment

NOTE: Using the method is optional, but highly recommended. Those who are not comfortable, first solve without using method. Then again through method. Don't panic, take is easy. Logic building takes practice. Be consistent.

Problem 1: Sum of Two Numbers (Using a Method)

Problem Statement:

Write a Java program that includes a method to calculate the sum of two numbers.

1. Create a method `sumOfTwoNumbers()` that takes two integers as parameters, calculates their sum, and returns the result.
2. In the main method, use the Scanner class to prompt the user to enter two integers.
3. Pass the user inputs to the `sumOfTwoNumbers()` method and print the sum.

Sample Input:

Enter first number: 15

Enter second number: 25

Expected Output:

The sum of 15 and 25 is 40.

The screenshot displays a Java IDE (Notepad++) on the left and a Windows Command Prompt on the right. The IDE shows the source code for `Sum.java`, which includes a `sumoftwo` method and a `main` method using `Scanner` for input. The Command Prompt shows the compilation and execution of the program, demonstrating the correction of a typo from `Syssem` to `System` and the successful output of the sum calculation.

```
import java.util.Scanner;

public class Sum {
    public static int sumoftwo (int num1, int num2) {
        return num1 +num2;
    }

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

        System.out.println("enter first number:");
        int first = scanner.nextInt();

        System.out.println("enter second number:");
        int second = scanner.nextInt();

        int sum = sumoftwo (first, second);

        System.out.println("The sum of " + first + " and" + second + " is " + sum + ":");
        scanner.close();
    }
}
```

Java Console

```
>>> ERROR: Failed to compile file "Sum.java", exit code = 1
>>> INFO: Compiling File "Sum.java"...
C:\Users\PC\OneDrive\Documents\Sum.java:11: error: package Syssem does not exist
    Syssem.out.println("enter first number:");
    ^
1 error
>>> ERROR: Failed to compile file "Sum.java", exit code = 1
>>> INFO: Compiling File "Sum.java"...
>>> SUCCESS: File "Sum.java" compiled successfully.
```

C:\Windows\System32\cmd.e

```
C:\Users\PC\OneDrive\Documents>javac Sum.java
Sum.java:11: error: package Syssem does not exist
    Syssem.out.println("enter first number
:");
    ^
1 error

C:\Users\PC\OneDrive\Documents>javac Sum.java

C:\Users\PC\OneDrive\Documents>1
'1' is not recognized as an internal or external comma
nd,
operable program or batch file.

C:\Users\PC\OneDrive\Documents>java Sum
enter first number:
9
enter second number:
7
The sum of 9 and7 is 16:

C:\Users\PC\OneDrive\Documents>java Sum
enter first number:
15
enter second number:
25
The sum of 15 and25 is 40:

C:\Users\PC\OneDrive\Documents>
```

Problem 2: Simple Age Checker (Using a Method)

Problem Statement:

Write a Java program that includes a method to check the age category.

1. Create a method `checkAgeCategory()` that takes an integer (age) as a parameter and prints whether the user is a minor, adult, or senior citizen.
2. In the main method, use the Scanner class to prompt the user to enter their age.
3. Pass the user's age to the `checkAgeCategory()` method.

Sample Input:

Enter your age: 30

Expected Output:

You are an adult.

The screenshot shows a Java IDE with a file named `Age.java` open. The code defines a `checkAge` method and a `main` method. The `main` method uses a `Scanner` to get user input and calls `checkAge`. The IDE shows three compilation errors: 'cannot find symbol' for `scanner` in the `checkAge` method, and 'cannot find symbol' for `Scanner` in the `main` method. The Java Console shows the compilation process and the final output of the program.

```
1 import java.util.Scanner;
2
3 public class Age{
4     public static void checkage (int age) {
5
6         if (age < 18){
7             System.out.println("You are a Minor");
8         } else if (age >= 18 && age <= 60) {
9             System.out.println("you are an Adult");
10        }else {
11            System.out.println("you are a senior citizen");
12        }
13    }
14
15    public static void main (String[] args){
16        Scanner scanner = new Scanner(System.in);
17
18        System.out.println("Enter your age");
19        int age = scanner.nextInt();
20
21        checkage(age);
22
23        scanner.close();
24
25    }
26
27 }
```

1 error

C:\Users\PC\OneDrive\Documents>javac Age.java

Age.java:1: error: cannot find symbol

import java.util.scanner;

^

symbol: class scanner

location: package java.util

Age.java:16: error: cannot find symbol

Scanner scanner = new scanner(scanner.

in);

^

symbol: class Scanner

location: class Age

Age.java:16: error: cannot find symbol

Scanner scanner = new scanner(scanner.

in);

^

symbol: class scanner

location: class Age

3 errors

C:\Users\PC\OneDrive\Documents>javac Age.java

C:\Users\PC\OneDrive\Documents>java Age

Enter your age

55

you are an Adult

C:\Users\PC\OneDrive\Documents>

Java Console

3 errors

>>> ERROR: Failed to compile file "Age.java", exit code = 1

>>> INFO: Compiling File "Age.java"...

>>> SUCCESS: File "Age.java" compiled successfully.

Problem 3: Print Even Numbers (Using while Loop)

Problem Statement:

Write a Java program that prints all even numbers between 1 and 50 using a while loop.

1. Create a method printEvenNumbers() that prints all even numbers from 1 to 50.
2. Use a while loop to iterate from 1 to 50 and print the even numbers.

Sample Output:

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50

```
C:\Users\PC\OneDrive\Documents\Even.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ? +
1 public class Even{
2     public static void printeven() {
3         int i=1;
4         while (i <=50){
5             if (i %2 == 0) {
6                 System.out.print(i + " ");
7             }
8             i++;
9         }
10    }
11
12    public static void main (String[] args) {
13        printeven();
14    }
15
16 }
17
18
19
20

Java Console
1 error
>>> ERROR: Failed to compile file "Even.java", exit code = 1
>>> INFO: Compiling File "Even.java"...
>>> SUCCESS: File "Even.java" compiled successfully.

C:\Windows\System32\cmd.exe
symbol:   class scanner
location: package java.util
Age.java:16: error: cannot find symbol
        Scanner scanner = new scanner(scanner.in);
        ^
symbol:   class Scanner
location: class Age
Age.java:16: error: cannot find symbol
        Scanner scanner = new scanner(scanner.in);
        ^
3 errors

C:\Users\PC\OneDrive\Documents>javac Age.java

C:\Users\PC\OneDrive\Documents>java Age
Enter your age
55
you are an Adult

C:\Users\PC\OneDrive\Documents>javac Evan.jav
error: Class names, 'Evan.jav', are only accepted if annotation
processing is explicitly requested
1 error

C:\Users\PC\OneDrive\Documents>javac Even.java

C:\Users\PC\OneDrive\Documents>java Even
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
48 50
C:\Users\PC\OneDrive\Documents>
```

Problem 4: User Input for Positive Numbers (Using do-while Loop)

Problem Statement:

Write a Java program that repeatedly asks the user to enter a positive number.

1. Create a method askForPositiveNumber() that uses a do-while loop to ask the user for a number until they enter a positive number.
2. Use the Scanner class to take the user's input.
3. Once a positive number is entered, the program should display the number.

Sample Input:

Enter a positive number: -5

Enter a positive number: 0

Enter a positive number: 8

Expected Output:

You entered a positive number: 8

```
1 import java.util.Scanner;
2
3 public class Positive{
4
5     public static void askforpositivenum() {
6         Scanner scanner = new Scanner(System.in);
7         int num;
8
9         do {
10             System.out.println("enter a positive number" );
11             num = scanner.nextInt();
12         } while (num <= 0);
13
14         System.out.println("you entered a positive number" + num);
15         scanner.close();
16     }
17
18     public static void main (String[] args){
19         askforpositivenum();
20     }
21 }
22
23
24
25
26
```

```
1 error
C:\Users\PC\OneDrive\Documents>javac Positive.java
C:\Users\PC\OneDrive\Documents>java Positive
enter a positive number
0
enter a positive number
-6
enter a positive number
0.9
Exception in thread "main" java.util.InputMismatchException
    at java.base/java.util.Scanner.throwFor(Scanner.java:947)
    at java.base/java.util.Scanner.next(Scanner.java:1602)
    at java.base/java.util.Scanner.nextInt(Scanner.java:2267)
    at java.base/java.util.Scanner.nextInt(Scanner.java:2221)
    at Positive.askforpositivenum(Positive.java:11)
    at Positive.main(Positive.java:19)
C:\Users\PC\OneDrive\Documents>java Positive
enter a positive number
0
enter a positive number
-9
enter a positive number
17
you entered a positive number17
C:\Users\PC\OneDrive\Documents>
```

```
1 error
>>> ERROR: Failed to compile file "Positive.java", exit code = 1
>>> INFO: Compiling File "Positive.java"...
>>> SUCCESS: File "Positive.java" compiled successfully.
```

Problem 5: Print Multiplication Table (Using for Loop)

Problem Statement:

Write a Java program that prints the multiplication table for a given number (e.g., number 5) using a for loop. The program should:

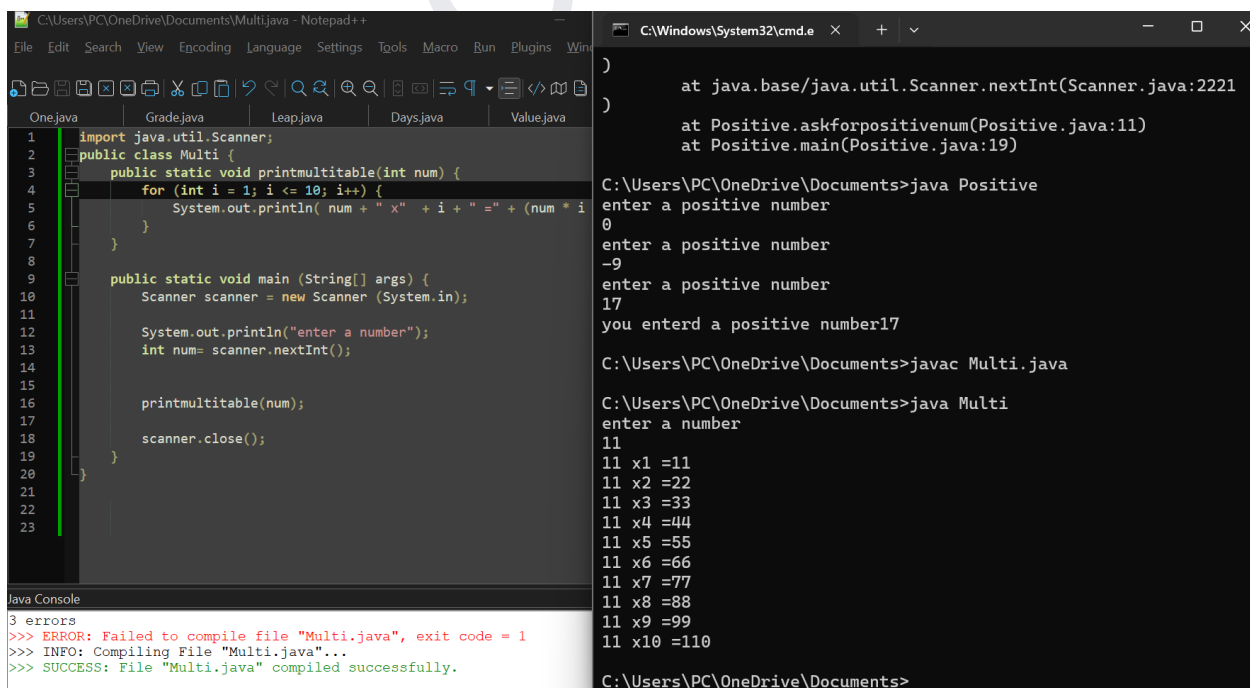
1. Create a method printMultiplicationTable() that takes a number as a parameter and prints its multiplication table from 1 to 10.
2. Use a for loop to iterate through numbers 1 to 10 and print the multiplication results.

Sample Input:

Enter a number: 5

Expected Output:

5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50



The screenshot shows a Java IDE (Notepad++) on the left and a Windows Command Prompt on the right. The IDE contains the following Java code:

```
1 import java.util.Scanner;
2 public class Multi {
3     public static void printmultitable(int num) {
4         for (int i = 1; i <= 10; i++) {
5             System.out.println( num + " x" + i + " =" + (num * i) );
6         }
7     }
8
9     public static void main (String[] args) {
10         Scanner scanner = new Scanner (System.in);
11
12         System.out.println("enter a number");
13         int num= scanner.nextInt();
14
15
16         printmultitable(num);
17
18         scanner.close();
19     }
20 }
21
22
23
```

The Command Prompt shows the following commands and output:

```
C:\Users\PC\OneDrive\Documents>java Positive
enter a positive number
0
enter a positive number
-9
enter a positive number
17
you entered a positive number17

C:\Users\PC\OneDrive\Documents>javac Multi.java

C:\Users\PC\OneDrive\Documents>java Multi
enter a number
11
11 x1 =11
11 x2 =22
11 x3 =33
11 x4 =44
11 x5 =55
11 x6 =66
11 x7 =77
11 x8 =88
11 x9 =99
11 x10 =110

C:\Users\PC\OneDrive\Documents>
```

The Java Console at the bottom of the IDE shows the following messages:

```
3 errors
>>> ERROR: Failed to compile file "Multi.java", exit code = 1
>>> INFO: Compiling File "Multi.java"...
>>> SUCCESS: File "Multi.java" compiled successfully.
```

Problem 6: Calculate the Sum of Numbers from 1 to N (Using for Loop)

Problem Statement:

Write a Java program that calculates the sum of all integers from 1 to N (where N is a positive integer) using a for loop. The program should:

1. Create a method calculateSum() that takes a number N and calculates the sum of all integers from 1 to N.
2. Use a for loop to iterate through all integers from 1 to N and add them up.

Sample Input:

Enter a number: 5

Expected Output:

The sum of numbers from 1 to 5 is: 15

```
C:\Users\PC\OneDrive\Documents\Cal.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Age.java Even.java Positive.java Multi.java Cal.java X
1 import java.util.Scanner;
2 public class Cal {
3     public static int calsum(int N) {
4         int sum = 0;
5         for (int i = 1; i <=N; i++) {
6             sum += i;
7         }
8     }
9     return sum;
10 }
11 public static void main (String[] args){
12     Scanner scanner = new Scanner(System.in);
13
14     System.out.println("enter a number");
15     int N = scanner.nextInt();
16
17     int result = calsum(N);
18     System.out.println("the sum of numbers from 1 to " + N + " is : " + result );
19
20     scanner.close();
21 }
22 }
23
24

C:\Windows\System32\cmd.e X + v
1 x5 =55
1 x6 =66
1 x7 =77
1 x8 =88
1 x9 =99
1 x10 =110

:\Users\PC\OneDrive\Documents>javac Cal.java
al.java:5: error: illegal start of expression
    for (int i = 1; i <=N; i==) {
                        ^
al.java:5: error: not a statement
    for (int i = 1; i <=N; i==) {
                        ^
al.java:17: error: ';' expected
    int result = calsum(N);
                ^
errors

:\Users\PC\OneDrive\Documents>javac Cal.java

:\Users\PC\OneDrive\Documents>java Cal
enter a number

the sum of numbers from 1 to 6 is : 21

:\Users\PC\OneDrive\Documents>java Cal
enter a number

the sum of numbers from 1 to 5 is : 15

:\Users\PC\OneDrive\Documents>

Java Console
1 error
>>> ERROR: Failed to compile file "Cal.java", exit code = 1
>>> INFO: Compiling File "Cal.java"...
>>> SUCCESS: File "Cal.java" compiled successfully.
```

Bonus Problem: Menu-Driven Java Program (Switch-Case)

Problem Statement:

You are required to write a **menu-driven Java program** that implements **four separate problems**. The program should allow the user to select which problem to run, execute the corresponding logic, and then return to the menu until the user chooses to exit.

The four problems are as follows (Already done in assignment 2, just put it in switch case):

Problem 1: Grade Evaluation System

Problem 2: Leap Year Check

Problem 3: Day of the week

Problem 4: Identify Default Values of Variables

Case 5: Exit

```
C:\Users\PC\OneDrive\Documents\Menu.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Cal.java Days.java Leap.java Grade.java Menu.java x
103 System.out.println("2. leap year Check");
104 System.out.println("3. Day of the wee");
105 System.out.println("4. Identify Default value");
106 System.out.println("5. Exit");
107 System.out.println("enter your choice:");
108 choice = scanner.nextInt();
109
110 switch (choice) {
111     case 1:
112         gradeEvaluation();
113         break;
114     case 2:
115         leapYearCheck();
116         break;
117     case 3:
118         daysofayear();
119         break;
120     case 4:
121         defaultvalue ();
122         break;
123     case 5:
124         System.out.println("exiting program ....! goodbye");
125         break;
126     default:
127         System.out.println("Invalid choice ! please enter number between 1 and 5 ");
128 }
129 }while (choice != 5);
130
131 scanner.close();
132 }
133
134

C:\Windows\System32\cmd.e x + v
4. Identify Default value
5. Exit
enter your choice:
4
byte a = 0
short b = 0
int c = 0
long d =0
float e = 0.0
double f =0.0
char g= 'a'
boolean h = false
ln===== Menu =====
1. Grade Evaluation System
2. leap year Check
3. Day of the wee
4. Identify Default value
5. Exit
enter your choice:
1
average marks: 71.33333333333333
grade:B
ln===== Menu =====
1. Grade Evaluation System
2. leap year Check
3. Day of the wee
4. Identify Default value
5. Exit
enter your choice:
2
Enter a year: 4545
4545 is not a leap year.
```