

JAVA PRACTICE ASSIGNMENT

1) Write a function to print the factorial of a number.

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q1_Factorial {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the number: ");  
        int no = sc.nextInt();  
        System.out.println("Factorial of the number is: " +  
            fact(no));  
    }  
  
    static int fact(int a) {  
        if (a == 0)  
            return 1;  
        else if (a > 0)  
            return a * fact(a - 1);  
        else  
            return 0;  
    }  
}
```

Output:

```
Q1_Factorial x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"  
Enter the number: 6  
Factorial of the number is: 720  
  
Process finished with exit code 0
```

JAVA PRACTICE ASSIGNMENT

2) Calculate simple interest. Accept P, T, R from user.

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q2_SimpleInterest {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the principal amount: ");  
        int p = sc.nextInt();  
        System.out.print("Enter the rate of interest: ");  
        int r = sc.nextInt();  
        System.out.print("Enter the number of years: ");  
        int n = sc.nextInt();  
        int interestCalculated = interest(p, r, n);  
        System.out.println("The amount of interest is: " + interestCalculated);  
        System.out.println("Total payable amount is: " + (p + interestCalculated));  
    }  
  
    public static int interest(int p, int r, int n) {  
        return p * r * n / 100;  
    }  
}
```

**Output:**

```
Q2_SimpleInterest x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"  
Enter the principal amount: 10000  
Enter the rate of interest: 4  
Enter the number of years: 1  
The amount of interest is: 400  
Total payable amount is: 10400  
  
Process finished with exit code 0
```

JAVA PRACTICE ASSIGNMENT

- 3) To check if the given number is Armstrong or not.
- 4) To print all Armstrong numbers between two range.

```
package Assignment1;  
  
import java.util.Scanner;  
import java.lang.Math;  
  
public class Q3_04_ArmstrongCheck {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        int choice;  
        System.out.print("Press 1 for armstrong and press 2 for armstrong  
range: ");  
        choice = sc.nextInt();  
        switch (choice) {  
            case 1 -> {  
                System.out.print("Enter the number you want to check: ");  
                int n = sc.nextInt();  
                System.out.print(is_armstrong(n) ? String.format("%d is  
Armstrong.", n)  
                    : String.format("%d is not an Armstrong number.",  
n));  
            }  
            case 2 -> {  
                System.out.print("Enter the starting range: ");  
                int start = sc.nextInt();  
                System.out.print("Enter the ending range: ");  
                int end = sc.nextInt();  
                Q3_04_ArmstrongCheck arm = new Q3_04_ArmstrongCheck();  
                System.out.printf("Armstrong numbers between %d and %d are:  
", start, end);  
                arm.armstrong_range(start, end);  
            }  
        }  
    }  
  
    public static boolean is_armstrong(int n) {  
        String ns = Integer.toString(n);  
        int len = ns.length();  
        int sum = 0;  
        char[] single = new char[len];  
  
        for (int j = 0; j < len; j++)  
            single = ns.toCharArray();  
  
        for (int i = 0; i < len; i++) {  
            int fnl = Integer.parseInt(String.valueOf(single[i]));  
            sum += Math.pow(fnl, len);  
        }  
        return sum == n;  
    }  
  
    void armstrong_range(int start, int end) {  
        for (int i = start; i <= end; i++)  
            if (is_armstrong(i))  
                System.out.print(i + " ");  
    }  
}
```

JAVA PRACTICE ASSIGNMENT

**Output:**

```
Q3_04_ArmstrongCheck x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:
Press 1 for armstrong and press 2 for armstrong range: 1
Enter the number you want to check: 153
153 is Armstrong.
Process finished with exit code 0

Q3_04_ArmstrongCheck x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:D:\Program Files\
Press 1 for armstrong and press 2 for armstrong range: 2
Enter the starting range: 1
Enter the ending range: 1000
Armstrong numbers between 1 and 1000 are: 1 2 3 4 5 6 7 8 9 153 370 371 407
Process finished with exit code 0
```

**5) To check if a given number is Prime. Use function.**

```
package Assignment1;

import java.util.Scanner;

public class Q5_PrimeCheck {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number you want to check: ");
        int no = sc.nextInt();
        System.out.print(is_prime(no) ? String.format("%d is a prime num-
ber.", no) : String.format("%d is a composite number.", no));
    }

    public static boolean is_prime(int n) {
        for (int i = 2; i <= n / 2; i++)
            if (n % i == 0)
                return false;
        return true;
    }
}
```

**Output:**

JAVA PRACTICE ASSIGNMENT

```
Q5_PrimeCheck x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"
Enter the number you want to check: 5
5 is a prime number.
Process finished with exit code 0
```

6) Print all prime numbers between two range.

```
package Assignment1;

import java.util.Scanner;

public class Q6_PrimeCheckRange {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the start range: ");
        int start = sc.nextInt();
        System.out.print("Enter the end range: ");
        int last = sc.nextInt();
        System.out.printf("Prime numbers between %d and %d are: ", start,
last);
        prime_range(start, last);
    }

    public static void prime_range(int start, int end) {
        for (int i = start; i < end; i++)
            if (Q5_PrimeCheck.is_prime(i))
                System.out.print(i + " ");
    }
}
```

Output:

```
Q6_PrimeCheckRange x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:D:\Program Files\Jet
Enter the start range: 1
Enter the end range: 50
Prime numbers between 1 and 50 are: 1 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47
Process finished with exit code 0
```

7) To print  $n^{th}$  prime number.

JAVA PRACTICE ASSIGNMENT

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q7_NthPrime {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter n: ");  
        int n = sc.nextInt();  
        nth_prime(n);  
    }  
  
    public static void nth_prime(int n) {  
        int counter = 0, i = 2;  
        while (counter != n) {  
            if (Q5_PrimeCheck.is_prime(i)) {  
                counter++;  
                if (counter == n) {  
                    System.out.println(i);  
                    break;  
                }  
            }  
            i++;  
        }  
    }  
}
```

Output:

```
Q7_NthPrime x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"  
Enter n: 9  
23  
Process finished with exit code 0
```

8) To print all composite numbers within  $n$ . Use function.

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q8_CompositeWithinN {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the range: ");  
        int n = sc.nextInt();  
        composite_check(n);  
    }  
  
    public static void composite_check(int n) {  
        System.out.print(2 + " ");  
        for (int i = 1; i <= n; i++)  
            if (!Q5_PrimeCheck.is_prime(i))  
                System.out.print(i + " ");  
    }  
}
```

JAVA PRACTICE ASSIGNMENT

**Output:**

```
Q8_CompositeWithinN x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"
Enter the range: 9
2 4 6 8 9
Process finished with exit code 0
```

**9) Find the area of circle.**

```
package Assignment1;

import java.util.Scanner;

public class Q9_AreaOfTheCircle {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the radius of the circle: ");
        float r = sc.nextFloat();
        System.out.println("The area of the circle is: " + area(r));
    }

    public static double area(float r) {
        return Math.PI * r * r;
    }
}
```

**Output:**

```
Q9_AreaOfTheCircle x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaag
Enter the radius of the circle: 6
The area of the circle is: 113.09733552923255

Process finished with exit code 0
```

**10) To print all Fibonacci numbers till  $n$ . Use function.**

JAVA PRACTICE ASSIGNMENT

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q10_Fibonacci {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the number: ");  
        int n = sc.nextInt();  
        for (int i = 0; i < n; i++)  
            System.out.print(fibonacci(n)[i] + " ");  
    }  
  
    public static int[] fibonacci(int n) {  
        int a = 0;  
        int b = 1;  
        int sum;  
        int[] arr = new int[n];  
        arr[0] = a;  
        for (int i = 1; i <= n - 1; i++) {  
            sum = a + b;  
            b = a;  
            a = sum;  
            arr[i] = sum;  
        }  
        return arr;  
    }  
}
```

**Output:**

```
Q10_Fibonacci x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"  
Enter the number: 6  
0 1 1 2 3 5  
Process finished with exit code 0
```

11) To print  $n^{th}$  Fibonacci number.



JAVA PRACTICE ASSIGNMENT

```
package Assignment1;  
  
import java.util.Scanner;  
  
import static Assignment1.Q10_Fibonacci.fibonacci;  
  
public class Q11_NthFibonacci {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the number: ");  
        int n = sc.nextInt();  
        System.out.println("The nth element of the fibonnaci series is: " +  
nth_fibonacci(n));  
    }  
  
    public static int nth_fibonacci(int n) {  
        return fibonacci(n)[fibonacci(n).length - 1];  
    }  
}
```

**Output:**

```
Q11_NthFibonacci x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"  
Enter the number: 6  
The nth element of the fibonnaci series is: 5  
Process finished with exit code 0
```

- 12) Sum of square of 1<sup>st</sup>  $n$  natural numbers using function.

JAVA PRACTICE ASSIGNMENT

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q12_SumOfSquareOfNNumber {  
    public static void main(String[] args) {  
        System.out.print("Enter the number: ");  
        Scanner sc = new Scanner(System.in);  
        int n = sc.nextInt();  
        int ans_wo_formula = sum_square_wo_formula(n);  
        int ans_with_formula = sum_square_formula(n);  
        System.out.println("The sum of cube of n natural numbers is(without  
formula): " + ans_wo_formula);  
        System.out.print("The sum of cube of n natural numbers is(with for-  
mula): " + ans_with_formula);  
    }  
  
    public static int sum_square_wo_formula(int n) {  
        int sum = 0;  
        for (int i = 1; i <= n; i++) {  
            sum += i * i;  
        }  
        return sum;  
    }  
  
    // or with formula  
    public static int sum_square_formula(int n) {  
        return n * (n + 1) * (2 * n + 1) / 6;  
    }  
}
```

**Output:**

```
Q12_SumOfSquareOfNNumber x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:D:\Pr  
Enter the number: 6  
The sum of cube of n natural numbers is(without formula): 91  
The sum of cube of n natural numbers is(with formula): 91  
Process finished with exit code 0
```

- 13) Sum of cube of 1<sup>st</sup> n natural numbers using function.

JAVA PRACTICE ASSIGNMENT

```
package Assignment1;  
  
import java.util.Scanner;  
  
public class Q13_SumOfCubeOfNNumber {  
    public static void main(String[] args) {  
        System.out.print("Enter the number: ");  
        Scanner sc = new Scanner(System.in);  
        int n = sc.nextInt();  
        int ans_wo_formula = sum_cube_wo_formula(n);  
        int ans_with_formula = sum_cube_formula(n);  
        System.out.println("The sum of cube of n natural numbers is(without  
formula): " + ans_wo_formula);  
        System.out.print("The sum of cube of n natural numbers is(with  
formula): " + ans_with_formula);  
    }  
  
    public static int sum_cube_wo_formula(int n) {  
        int sum = 0;  
        for (int i = 1; i <= n; i++) {  
            sum += i * i * i;  
        }  
        return sum;  
    }  
  
    // or with formula  
    public static int sum_cube_formula(int n) {  
        return n * n * (n + 1) * (n + 1) / 4;  
    }  
}
```

**Output:**

```
Q13_SumOfCubeOfNNumber x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:D:\Pr  
Enter the number: 6  
The sum of cube of n natural numbers is(without formula): 441  
The sum of cube of n natural numbers is(with formula): 441  
Process finished with exit code 0
```

**14)** To check Palindrome. Use function.

JAVA PRACTICE ASSIGNMENT

```
package Assignment1;  
  
import java.util.Objects;  
import java.util.Scanner;  
  
public class Q14_Palindrome {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter the string to check for palindrome: ");  
        String str = sc.next();  
        System.out.println(palindrome(str) ? String.format("%s is a palin-  
drome.", str) : String.format("%s is not a palindrome.", str));  
        System.out.print("Enter the number to check for palindrome: ");  
        int no = sc.nextInt();  
        System.out.println(palindrome(no) ? String.format("%d is a palin-  
drome.", no) : String.format("%d is not a palindrome", no));  
    }  
  
    public static boolean palindrome(String str) {  
        return Objects.equals(str, reverse(str));  
    }  
  
    public static String reverse(String str) {  
        char[] arr = str.toCharArray();  
        StringBuilder rev_str = new StringBuilder();  
        for (int i = arr.length - 1; i >= 0; i--)  
            rev_str.append(arr[i]);  
        return rev_str.toString();  
    }  
  
    // Method Overriding  
    public static boolean palindrome(int num) {  
        return num == reverse(num);  
    }  
  
    public static int reverse(int num) {  
        String str = Integer.toString(num);  
        char[] arr = str.toCharArray();  
        StringBuilder rev_str = new StringBuilder();  
        for (int i = arr.length - 1; i >= 0; i--)  
            rev_str.append(arr[i]);  
        return Integer.parseInt(rev_str.toString());  
    }  
}
```

**Output:**

```
Q14_Palindrome x  
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaag  
Enter the string to check for palindrome: Nayan  
Nayan is not a palindrome.  
Enter the number to check for palindrome: 123654  
123654 is not a palindrome.  
Process finished with exit code 0
```

JAVA PRACTICE ASSIGNMENT

15) Reverse words in a long string using function.

```
package Assignment1;

import java.util.Scanner;

public class Q15_ReverseWords {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a sentence: ");
        String sentence = sc.nextLine();
        reverse(sentence);
    }

    public static void reverse(String sentence) {
        String[] words = sentence.split(" ");
        for (int i = words.length - 1; i >= 0; i--)
            System.out.print(words[i] + " ");
    }
}
```

Output:

```
Q15_ReverseWords x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe"
Enter a sentence: This is a laptop
laptop a is This
Process finished with exit code 0
```

16) To remove a character from a string at specific position and print the remaining string.

```
package Assignment1;

import java.util.Scanner;

public class Q16_RemoveChar {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the string: ");
        String str = sc.next();
        System.out.print("Enter the position: ");
        int index = sc.nextInt();
        System.out.printf(rev_char(str, index) + " is what we get by removing from %d position in %s", index, str);
    }

    public static String rev_char(String str, int i) {
        return str.substring(0, i - 1) + str.substring(i);
    }
}
```

Output:

JAVA PRACTICE ASSIGNMENT

```
Q16_RemoveChar x
"D:\Program Files\Java\jdk-17.0.1\bin\java.exe" "-javaagent:D:\Pro
Enter the string: Dishang
Enter the position: 3
Dihang is what we get by removing from 3 position in Dishang
Process finished with exit code 0
```