

Project Work
Class –9
Computer Applications

1 Mr. Agarwal invests certain sum at 5% per annum compound interest for three years. Write a program in Java to calculate:

- (a) the interest for the first year
- (b) the interest for the second year
- (c) the amount after three years.

Take sum as an input from the user.

Sample Input: Principal = ₹5000, Rate =10%, Time = 3 yrs

Sample Output: Interest for the first year: ₹500

Interest for the second year: ₹550

Interest for the third year: ₹605

2. A businessman wishes to accumulate 3000 shares of a company. However, he already has some shares of that company valuing ₹10 (nominal value) which yield 10% dividend per annum and receive ₹2000 as dividend at the end of the year. Write a program in Java to calculate the number of shares he has and how many more shares to be purchased to make his target.

Hint: No. of share = (Annual dividend * 100) / (Nominal value * div%)

3. A Pre-Paid taxi charges from the passenger as per the tariff given below:

Distance	Rate
Up to 5 km	₹ 100

Distance	Rate
For the next 10 km	₹ 10/km
For the next 10 km	₹ 8/km
More than 25 km	₹ 5/km

Write a program to input the distance covered and calculate the amount paid by the passenger. The program displays the printed bill with the details given below:

Taxi No. :
 Distance covered :
 Amount :

4. Given below is a hypothetical table showing rate of income tax for an India citizen, who is below or up to 60 years.

Taxable income (TI) in ₹	Income Tax
Up to ₹ 2,50,000	Nil
More than ₹ 2,50,000 and less than or equal to ₹ 5,00,000	$(TI - 1,60,000) * 1$
More than ₹ 5,00,000 and less than or equal to ₹ 10,00,000	$(TI - 5,00,000) * 2$ 34,000
More than ₹ 10,00,000	$(TI - 10,00,000) * 3$ 94,000

Write a program to input the name, age and taxable income of a person. If the age is more than 60 years then display the message "Wrong Category". If the age is less than or equal to 60 years then

compute and display the income tax payable along with the name of tax payer, as per the table given above.

5. The volume of solids, viz. cuboid, cylinder and cone can be calculated by the formula:

1. Volume of a cuboid ($v = l*b*h$)
2. Volume of a cylinder ($v = \pi*r^2*h$)
3. Volume of a cone ($v = (1/3)*\pi*r^2*h$)

Using a switch case statement, write a program to find the volume of different solids by taking suitable variables and data types.

6. A Mega Shop has different floors which display varieties of dresses as mentioned below:

1. Ground floor : Kids Wear
2. First floor : Ladies Wear
3. Second floor : Designer Sarees
4. Third Floor : Men's Wear

The user enters floor number and gets the information regarding different items of the Mega shop. After shopping, the customer pays the amount at the billing counter and the shopkeeper prints the bill in the given format:

Name of the Shop: City Mart

Total Amount:

Visit Again!!

Write a program to perform the above task as per the user's choice.

7. Write a program using switch case to display different seasons in a year

8. 'Kumar Electronics' has announced the following seasonal discounts on purchase of certain items.

Purchase Amount	Discount on Laptop	Discount on De
Up to ₹ 25000	0.0%	5.0%
₹ 25,001 to ₹ 50,000	5%	7.5%
₹ 50,001 to ₹ 1,00,000	7.5%	10.0%
More than ₹ 1,00,000	10.0%	15.0%

Write a program to input name, amount of purchase and the type of purchase ('L' for Laptop and 'D' for Desktop) by a customer. Compute and print the net amount to be paid by a customer along with his name.

(Net amount = Amount of purchase - discount)

9. Write a program to enter any 50 numbers and check whether they are divisible by 5 or not. If divisible then perform the following tasks:

(a) Display all the numbers ending with the digit 9.

(b) Count those numbers ending with 0 (zero).

10. Write a program to display the sum of the following series

a) $S = 1/a + 1/a^2 + 1/a^3 + \dots + 1/a^n$

b) $S = x/2 + x/5 + x/8 + x/11 + \dots + x/200$

11) Write a program to input Principal (p), Rate (r) and Time (t). Calculate and display the amount, which is compounded annually for each year by using the formula:

Simple Interest (si) = $(prt) / 100$

$$p = p + si$$

[**Hint:** The amount after each year is the Principal for the next year]

12) Write a menu driven class to accept a number from the user and check whether it is a Palindrome or a Perfect number.

(a) Palindrome number: (A number is a Palindrome which when read in reverse order is same as in the right order)

Example: 11, 101, 151 etc.

(b) Perfect number: (A number is called Perfect if it is equal to the sum of its factors other than the number itself.)

Example: $6 = 1 + 2 + 3$

13) Write a program to input a number. Check and display whether it is a Niven number or not. (A number is said to be Niven which is divisible by the sum of its digits).

Example: Sample Input 126

Sum of its digits = $1 + 2 + 6 = 9$ and 126 is divisible by 9.

14) Write a program to accept a number and check whether it is a 'Spy Number' or not. (A number is spy if the sum of its digits equals the product of its digits.)

Example: Sample Input: 1124

Sum of the digits = $1 + 1 + 2 + 4 = 8$

Product of the digits = $1 * 1 * 2 * 4 = 8$

15) Write a program to calculate and display the factorials of all the numbers between 'm' and 'n' (where $m < n$, $m > 0$, $n > 0$).

[**Hint:** factorial of 5 means: $5! = 5 * 4 * 3 * 2 * 1$]

16) Write a program to input a number and perform the following tasks:

(a) to check whether it is a prime number or not

(b) to reverse the number

If the number as well as the reverse is also 'Prime' then display 'Twisted Prime' otherwise 'Not a twisted Prime'.

Sample Input: 167

Sample Output: 167 and 761 both are prime.
It is a 'Twisted Prime'.

17) Write the programs in Java to display the following patterns:

(a)

```
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
```

b) 1 2 3 4 5

```
1 2 3 4
1 2 3
1 2
1
```

18) Write the programs in Java to display the following pattern:

```
1 3 5 7 9
1 3 5 7
1 3 5
1 3
1
```

19) Write the programs in Java to display the following pattern:

```
9
7 9
5 7 9
3 5 7 9
1 3 5 7 9
```

20) Write the programs in Java to display the following pattern:

```
1
```

