OBJECTIVES : Relational and logical operators, if and if… else statement, compound statements, nested if and switch statements
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Q1. a. Write a C program that calculates and displays the sum and average of numbers from 1 to 10.

Project Name: LG7_Q1a
File Name: Q1a.cpp

Example Run:
```
The sum of the numbers is 55
The average of the numbers is 5.50
```

b. Modify the source code **Q1a.cpp,** so the program calculates and displays the sum and average of numbers from 1 to n. Get the value n from the user.

Project Name: LG7_Q1b
File Name: Q1b.cpp

Example Run:
```
Enter a value:14
The sum of the numbers is 105
The average of the numbers is 7.50
```

c. Now, copy the source code of **Q2b.cpp** into a new project and modify it, so the program inputs two integer values m and n as a range. Your program calculates and displays the sum of the numbers between m to n and their average.

Project Name: LG7_Q1c
File Name: Q1c.cpp

Example Run:
```
Enter a range:16 28
The sum of the numbers is 286
The average of the numbers is 22.00
```

Q2. Write a C program that generates a random integer between **0 – 99**. If that integer **modulus 9** is:
  0: displays the number itself.
  1 or **2:** displays the sum of the numbers from 1 to that random number.
  3, 4, 5 : displays the square root of the number.
  Otherwise: asks the user to enter 10 integers, finds and displays their average.

Project Name: LG7_Q2
File Name: Q2.cpp

Example Run#1:
```
Sum of the numbers 0 to 74 is 2775
```
Example Run#2:
```
Square root of 22 is 4.690416
```

Example Run#3:
```
Enter 10 integers:
5
7
1
9
45
2
5
9
11
3
Average of these numbers is 9.7
```

Q3. In a Corporation Kindergarten application, there is a system that gets number of applicants from the user. Then gets each applicants gender (Male: M/m, Female: F/f) and age. Also gets parent status;
- If parents are staff of the corporation (Staff: S/s);
    - And if child age is less than **4**, there is a **45%** discount for the applicant fee.
    - And if child age is greater than or equal to **4**, there is a **35%** discount for the applicant fee.
- If parents are not staff of the corporation (Any character); they will pay the fix applicant price which is **400 TL**.

Write a C program that calculates the applicant fee to each applicants for the Kindergarten of a corporation.

Example Run:
```
Enter the number of applicants for kindergarten:4


Enter 1. applicant gender and age:f 4
Enter 1. applicant parent status (Staff/NOT Staff) (S/Any other char):s
Applicant price is 260.00TL

Enter 2. applicant gender and age:m 3
Enter 2. applicant parent status (Staff/NOT Staff) (S/Any other char):s
Applicant price is 220.00TL

Enter 3. applicant gender and age:f 3
Enter 3. applicant parent status (Staff/NOT Staff) (S/Any other char):t
Applicant price is 400.00TL

Enter 4. applicant gender and age:m 4
Enter 4. applicant parent status (Staff/NOT Staff) (S/Any other char):n
Applicant price is 400.00TL
```

Project Name: LG7_Q3
File Name: Q3.cpp

Q4. A well-regarded manufacturer of widgets has been losing 4% of its sales each year. The annual profit for the firm is 10% of sales. Write a C program that gets the initial sales of the firm and the number of years and **displays a table that shows the sales and profit amounts of the firm at the end of each year and the total sales and profit.**

Example Run:
```
Enter the sales of the firm: 350000
Enter the number of years: 5

YEAR        SALES            PROFIT
----------------------------------------
  1        336000.00         33600.00
  2        322560.00         32256.00
  3        309657.60         30965.76
  4        297271.30         29727.13
  5        285380.44         28538.04
----------------------------------------
TOTAL     1550869.34        155086.93
```

Project Name: LG7_Q4
File Name: Q4.cpp

Additional Questions

AQ1.

A company has 5 workers. It gives 15% salary increase to its workers whose salaries are less than 500 TL, and 13% salary increase to the other workers. The company has a savement box (tutum sandığı) and some of the workers are members of this box. 5% of the salary of a worker is cut to be put into that box if the worker is a member of the savement box. Given the ID, the amount of the previous salary, and information about the membership to the savement box (Y means member, N means not) of each worker, display the ID and the new salary of each worker. Display also the number of workers who are members of the savement box, and the total amount of money saved into the box.

Example Run:

```
Enter ID and salary of a worker: 111 845
Is the worker a member of the savement box (Y for yes, N for no) :y
Worker ID: 111  New Salary: 907.11 TL

Enter ID and salary of a worker: 222 560
Is the worker a member of the savement box (Y for yes, N for no) :n
Worker ID: 222  New Salary: 632.80 TL

Enter ID and salary of a worker: 333 830
Is the worker a member of the savement box (Y for yes, N for no) :y
Worker ID: 333  New Salary: 891.00 TL

Enter ID and salary of a worker: 444 470
Is the worker a member of the savement box (Y for yes, N for no) :n
Worker ID: 444  New Salary: 540.50 TL

Enter ID and salary of a worker: 555 780
Is the worker a member of the savement box (Y for yes, N for no) :y
Worker ID: 555  New Salary: 837.33 TL
3 workers are members of the savement box.
138.71 TL has been saved in the box
```

Project Name: LG7_AQ1
File Name: AQ2.cpp

AQ2. An Insurance Company determines auto insurance rates based on a driver's licence year and gender.
- The base rate is 10% of the price of the car.
- For male drivers, if the licence year is
    - less than 10, no discount,
    - between 10 and 20, 4% discount,
    - more than 20, 6% discount
- Female drivers, if the licence year is
    - less than 5, no discount,
    - between 5 and 10, 5% discount,
    - more than 10, 7% discount
- Married couples will have 10% extra discount.

Write a C program that gets the number of drivers, and for each driver; the price of the car, marital status, gender, and how long the user have a driver licence information and shows the insurance premium (Total Cost of the insurance). **Use switch statement (where possible) and do not make any unnecessary checks. Do not check for invalid data.**

Project Name: LG7_AQ2
File Name: AQ2.cpp

Example Run:
```
Enter the number of drivers: 4

Enter the information of the 1.driver;
Car price         : 250000
Marital status    : s
Gender            : M
Years             : 12
```
```
The cost of the insurance is $ 24000.0

Enter the information of the 2.driver;
Car price         : 520000
Marital status    : M
Gender            : m
```

```
Years             : 5
The cost of the insurance is $ 46800.0

Enter the information of the 3.driver;
Car price         : 190000
Marital status    : S
Gender            : f
Years             : 18
```

```
The cost of the insurance is $ 17670.0

Enter the information of the 4.driver;
Car price         : 120000
Marital status    : m
Gender            : F
Years             : 8
The cost of the insurance is $ 10200.0
```