**PAILAN WORLD SCHOOL**

**Class X**

**Computer Applications**

**ICSE Project Topics**

1. Write a program to compute and display the sum of the following series:

$$\frac{1+2}{1\times2}+\frac{1+2+3}{1\times2\times3}+....+\frac{1+2+3+4....n}{1\times2\times3\times4....n}$$

2. Using a switch statement, write a menu driven program to convert a given temperature from Fahrenheit to Celsius and vice versa. For an incorrect choice, an appropriate error message should be displayed.

   (HINT : $C = \frac{5}{9} \times (F - 32)$ and $F = 1.8 \times (C + 32)$

3. 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 read 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

4. Write a menu driven program to accept a number and check and display whether it is a prime number or not OR an automorphic number or not. (Use switch- case statement)

   **(a)** Prime number: a number is said to be a prime number if it is divisible only by 1 and itself and not by any other number.

   Example : 3, 5, 7, 11, 13 etc.,

   **(b)** Automorphic number: An automorphic number is the number which is contained in the last digit(s) of its square.

   Example 25 is an automorphic number as its square is 625 and 25 is present as the last two digits.

5. Write a menu driven program to perform the following: (Use switch-case statement)

   (a) To print the series 0, 3, 7, 15, 24, ..... n terms (value of 'n' is to be an input by the user).

   (b) To find the sum of the series given below :

   S = 1/2 + 3/4 + 5/6 + 7/8 + ..... 19/20.

6.

The International Standard Book Number (ISBN) is a unique numeric book identifier which is printed on every book. The ISBN is based upon a 10-digit code. The ISBN is legal if:

$1 \times digit_1 + 2 \times digit_2 + 3 \times digit_3 + 4 \times digit_4 + 5 \times digit_5 + 6 \times digit_6 + 7 \times digit_7 + 8 \times digit_8 + 9 \times digit_9 + 10 \times digit_{10}$ is divisible by 11.

Example : For an ISBN 1401601499

Sum = 1×1 + 2×4 +3×0 + 4×1 + 5×6 + 6×0 + 7×1 + 8×4 + 9×9 + 10×9 = 253 which is divisible by 11.

Write a program to :

(i) Input the ISBN code as a 10-digit integer.

(ii) If the ISBN is not a 10-digit integer, output the message, "Illegal ISBN" and terminate the program.

(iii) If the number is 10-digit, extract the digits of the number and compute the sum as explained above. If the sum is divisible by 11, output the message, "Legal ISBN". If the sum is not divisible by 11, output the message, "Illegal ISBN".

7.

Given below is a hypothetical table showing rates of Income Tax for male citizens below the age of 65 years :

| Taxable Income (TI) in Rs. | Income Tax in Rs. |
|---|---|
| Does not exceed Rs. 1,60,000 | Nil |
| Is greater than Rs. 1,60,000 and less than or equal to Rs. 5,00,000 | (TI−1,60,000) × 10% |
| Is greater than Rs. 5,00,000 and less than or equal to Rs. 8,00,000 | [(TI−5,00,000 × 20%] + 34,000 |
| Is greater than Rs. 8,00,000 | [(TI−8,00,000 × 30%] + 94,000 |

Write a program to input the age, gender (male or female) and Taxable Income of a person.

If the age is more than 65 years or the gender is female, display "wrong category".

If the age is less than or equal to 65 years and the gender is male, compute and display the Income Tax payable as per the table given above.

8. Write a program to input a number and check if it is an Emirp number or not. A number is called an Emirp number if the number and its reverse both are Prime. Example: 13 and 31

9. Write a program to store the weight of 20 students of your class and print it in Descending order using Selection Sorting technique.

10. Write a program to accept an year and search it in the given list using Binary Search:

**2000, 2003, 2005, 2008, 2012, 2016, 2018, 2020, 2022, 2025**

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