1. Write a program in C that prints all the perfect numbers between 1 and 1000. An integer is said to be a perfect number if its factors, including 1 (but not the number itself, sum to the number. For example

Number	Factors (Excluding the number itself)	Sum
6	1, 2 , 3	1 + 2 + 3 = 6
28	1, 2, 4, 7, 14	1 + 2 + 4 + 7 + 14 = 28

2. Write a program in C displaying a menu with options CIRCLE, SQUARE, RECTANGLE, TRIANGLE and EXIT. Get the appropriate input from the user for calculating the AREA of the chosen option. For example if CIRCLE is chosen then get only 'r' (radius) as input and calculate the Area of the circle. Repeat this until EXIT option is chosen.

3. A school offers scholarships for meritorious students. Students can take six subjects (English, Language, Mathematics, Physics, Chemistry and Computer Science), to apply for awards. The requirements are below.

Award	Award application requirements (Marks)
Ramanujan award	80 or above in Mathematics
Turing award	80 or above in Computer science
Einstein award	90 or above in both Physics and Mathematics
Shakespeare award	75 or above in English but less than 85
Great Poet award	85 or above in Language and English
Altman award	90 or above in chemistry
Genius kid award	If eligible for more than 2 awards listed above , no score less than 50,and overall percentage > 70

Develop a C program to display the award for a particular student.

4.Write a program which asks the user to enter a character. Check whether the user has typed a character (either uppercase or lowercase) or digit and display the result (using **if…else if** ladder). ASCII values for characters and digits are given below:

Character **ASCII Value**

‘0’ – ‘9’ 48 – 57

‘A’ – ‘Z’ 65 – 90

‘a’ – ‘z’ 97 – 122

5. The wind chill index (WCI) is calculated from the wind speed v in miles per hour and the temperature t in Fahrenheit. Three formulas are used, depending on the wind speed:

   if (0 <= v <= 4) then WCI = t

   if (v >=45) then WCI = 1.6t - 55

   otherwise, WCI = 91.4 + (91.4 - t)(0.0203v - 0.304(v)1/2 - 0.474).

   Write a program that can calculate the wind chill index.

6. The distance a vehicle travels can be calculated as follows:

   distance = speed * time

   For example, if a train travels 40 miles per hour for 3 hours, the distance traveled is 120 miles. Write a program that asks the user for the speed of a vehicle (in miles per hour) and the number of hours it has traveled. The program should then use a loop to display the distance the vehicle has traveled for each hour during that time period.

   Sample output:

   What is the speed of the vehicle in mph? 40

   How many hours has it traveled? 3

   Hour Distance Traveled

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   1 40

   2 80

   3 120

7. Write a program to find all Armstrong numbers in the range of 0 and 999.

Hint: *An Armstrong number of three digits is an integer such that the sum of the cubes of its digits is equal to the number itself. For example,* 371 is an *Armstrong number* because $3^3 + 7^3 + 1^3 = 27 + 343 + 1 = 371$