CSE 1110: Introduction to Computer Systems

Problem Set for C programming

Problems regarding while loop

From for to while

1. Write a C program that will print all integers between 1 and n. You must use while loop.

Sample input	Sample output
5	1 2 3 4 5
8	1 2 3 4 5 6 7 8

2. Write a C program that will print the first n odd numbers. You must use while loop.

Sample input	Sample output
5	1 3 5 7 9
8	1 3 5 7 9 11 13 15

3. Write a C program that will calculate the sum of the following series up to its nth term:

$$1.3 + 2.6 + 4.9 + 8.12 + \cdots$$

Sample input	Sample output
5	387
8	5379

4. Write a C program that will take as input an integer n, and find out if it is prime or not.

Sample input	Sample output
25	Not prime
29	Prime

Mathematical problems

1. Write a C program that will take as input two integers, and calculate their GCD.

Sample input	Sample output
12 57	3
65 35	5

2. Write a C program that will take as input two integers, and calculate their LCM.

Sample input	Sample output
24 60	120
25 75	75

Digit extraction

1. Write a C program to calculate the sum of the digits of an input integer.

Sample input	Sample output
65237	23

2. Write a C program to find out the reverse of an input integer.

Sample input	Sample output
65237	73256

3. Write a C program to find out if an input integer is palindrome or not.

Sample input	Sample output
65237	Not palindrome
74947	Palindrome

4. Write a C program to find the frequency of each digit in an input integer.

Sample input	Sample output
65526374	2 => 1 3 => 1 4 => 1 5 => 2 6 => 2 7 => 1

5. Write a C program to swap the first and the last digits of an input integer.

Sample input	Sample output
65237	75236

6. Write a C program to find out if an input integer is an Armstrong number or not. An Armstrong number is one for which the sum of each digit to the power of the number of digits is the same as the number itself.

Sample input	Sample output	Explanation
371	Armstrong	$3^3 + 7^3 + 1^3 = 371$
1634	Armstrong	$1^4 + 6^4 + 3^4 + 4^4 = 1634$
503	Not Armstrong	$5^3 + 0^3 + 3^3 = 152 \neq 503$

Number systems

1. Write a C program to convert an input integer to binary.

Sample input	Sample output
27	11011
68	1000100

2. Write a C program to convert an input integer to octal.

Sample input	**Sample output**
27	33
68	104

3. Write a C program to convert a binary integer to decimal.

Sample input	**Sample output**
11011	27
1000100	68

4. Write a C program to convert an octal integer to decimal.

Sample input	**Sample output**
33	27
104	68