CSE 1110: Introduction to Computer Systems

Problem Set for C programming

Problems regarding for loop

Doing a task repeatedly

1. Write a C program that will print the string "Hello World!" n times.

Sample input	Sample output
3	Hello World! Hello World! Hello World!
5	Hello World! Hello World! Hello World! Hello World! Hello World!

2. Write a C program that will print all integers between 1 and n.

Sample input	Sample output
3	1 2 3
5	1 2 3 4 5

Series with an upper limit

Write C programs that will print the all the numbers of the following series up to n (i.e. the last term cannot exceed n).

1. 1, 2, 3, 4, 5 …

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

2. 1, 3, 5, 7, 9, …

Sample input	Sample output
5	1 3 5
8	1 3 5 7

3. 2, 4, 6, 8, 10, …

Sample input	Sample output
5	2 4
8	2 4 6 8

4. 3, 6, 9, 12, 15, …

Sample input	Sample output
5	3
8	6

5. 1, 2, 4, 8, 16, …

Sample input	Sample output
5	1 2 4
8	1 2 4 8

6. 5, 10, 20, 40, 80 …

Sample input	Sample output
30	5 10 20
100	5 10 20 40 80

7. 10, 30, 90, 270, 810, …

Sample input	Sample output
100	10 30 90
500	10 30 90 270

Series with no. of terms

Write C programs that will print the first n terms of the following series.

1. 1, 2, 3, 4, 5 …

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

2. 1, 3, 5, 7, 9, …

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

3. 2, 4, 6, 8, 10, …

Sample input	Sample output
5	2 4 6 8 10
8	2 4 6 8 10 12 14 16

4. 3, 6, 9, 12, 15, …

Sample input	Sample output
5	3 6 9 12 15
8	3 6 9 12 15 18 21 24

5. 1, 2, 4, 8, 16, …

Sample input	Sample output
5	1 2 4 8 16
8	1 2 4 8 16 32 64 128

6. 5, 10, 20, 40, 80 …

Sample input	Sample output
5	5 10 20 40 80
8	5 10 20 40 80 160 320 640

7. 10, 30, 90, 270, 810, …

Sample input	Sample output
5	10 30 90 270 810
8	10 30 90 270 810 2430 7290 21870

Sum of series

Write C programs that will calculate the sum of each series up to its n terms.

1. 1 + 2 + 3 + 4 + 5 …

Sample input	Sample output
5	15
8	36

2. 1 + 3 + 5 + 7 + 9 + …

Sample input	Sample output
5	25
8	64

3. 2 + 4 + 6 + 8 + 10 + …

Sample input	Sample output
5	30
8	72

4. 3 + 6 + 9 + 12 + 15 + …

Sample input	Sample output
5	45
8	108

5. 1 + 2 + 4 + 8 + 16 + …

Sample input	Sample output
5	31
8	255

6. 5 + 10 + 20 + 40 + 80 + …

Sample input	Sample output
5	155
8	1275

7. 10 + 30 + 90 + 270 + 810 + …

Sample input	Sample output
5	1210
8	32800

8. $1^2 + 2^2 + 3^2 + 4^2 + 5^2 + …$

Sample input	Sample output
5	55
8	204

9. 1.2 + 2.3 + 3.4 + 4.5 + 5.6 + …

Sample input	Sample output
5	70
8	240

10. 2.5 + 4.8 + 8.11 + 16.14 + 32.17 + …

Sample input	Sample output
5	898
8	11778

Miscellaneous

1. Write a C program that will take as input an integer, and calculate its factorial.

Sample input	Sample output
5	120
8	40320

2. Write a C program that will take as input two integers n and r, and calculate $^{n}P_{r}$.

Sample input	Sample output
6 2	30
8 3	336

3. Write a C program that will take as input two integers a and n, and calculate a^{n}. (You cannot use math.h)

Sample input	Sample output
2 3	8
3 5	243

4. Write a C program that will find out if an input integer is prime or not.

Sample input	Sample output
23	Prime
27	Not prime