

CSE 115 Lab on simple loop (part 1)

1. Write a C program that computes the sum of the series: $3+7+11+\dots+n$, where n is a user input

<pre>//Program using while loop: #include<stdio.h> void main() { int n, i=3, sum=0; printf("Enter the value of n:"); scanf("%d",&n); while(i<=n) { sum+=i; i+=4; } printf("sum=%d", sum); }</pre>	<pre>//Program using for loop: #include<stdio.h> void main() { int n, i, sum = 0; printf("Enter the value of n:"); scanf("%d",&n); for(i=3; i<=n; i+=4) { sum+=i; } printf("sum=%d", sum); }</pre>
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2. Write a C program to print all odd numbers from 1 to n (n is user input) using for loop.

<pre>#include <stdio.h> void main() { int i, n; printf("Print odd numbers till: "); scanf("%d", &n); //Read the upper limit</pre>	<pre>printf("All odd numbers from 1 to %d are: \n", n); for(i=1; i<=n; i+=2) { printf("%d\n", i); } }</pre>
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3. Write a C program that reads an integer and then computes & prints the factorial of that integer

<pre>#include<stdio.h> void main() { int n, i, fact = 1; printf("Enter the value of n:"); scanf("%d",&n); for(i=1; i<=n; i++) { fact*=i; } printf("n!=%d", fact); }</pre>

Exercise Problems (You must use a loop for solving these problems):

- Write a program to display all decimal digits (i.e., numbers in the range 0 - 9) in reverse order.
Example output: 9 8 7 6 5 4 3 2 1 0
- Write a program to display all the letters of the alphabet (a-z). Use two for loops: the 1st one will print all letters in small letters and the 2nd one will print them in capital letters.
Example output: a b c d e z
 A B C D Z
- Write a program to compute the following series using while loop: $4+11+18+\dots+n$

4. Write a program to compute the following series using while loop: $2^3+5^3+8^3+\dots+n^3$
5. Write a program to print all even numbers between m and n (m, n are user inputs) in reverse order.

Sample input/output (bold ones are inputs):

Enter m: **9**

Enter n: **21**

All even numbers between 9 and 20 in reverse order: 20, 18, 16, 14, 12, 10

Assignment Problems (You must use a loop for solving these problems):

1. Write a program to compute the following series using while loop: $5^2+9^2+15^2+23^2+\dots+n^2$
2. Write a program that computes the following series using for loop: $10000+2000+400+\dots+16$
3. Write a program that takes a minimum number, a maximum number, and common difference and prints the sum of the *arithmetic* series between them.

Sample input/output (bold ones are inputs):

Enter minimum: **11**

Enter maximum: **19**

Enter Common difference: **2**

The Sum is: $11 + 13 + 15 + 17 + 19 = 75$

4. Write a program that takes a minimum number, a maximum number, and common ratio and prints the sum of the *geometric* series between them.

Sample input/output (bold ones are inputs):

Enter minimum: **5**

Enter maximum: **150**

Enter Common ratio: **3**

The Sum is: $5 + 15 + 45 + 135 = 200$

5. Write a C program to print the multiplication table ($\square\square\square\square\square$) of any given integer number.

Sample input/output (bold ones are inputs):

Enter number to print the multiplication table of: **5**

$5 * 1 = 5$

$5 * 2 = 10$

$5 * 3 = 15$

$5 * 4 = 20$

$5 * 5 = 25$

$5 * 6 = 30$

$5 * 7 = 35$

$5 * 8 = 40$

$5 * 9 = 45$

$5 * 10 = 50$

6. Write a C program to compute the value of ${}^nP_r = n*(n-1)*(n-2)*\dots*(n-r+1)$, read n and r from user.
7. Write a C program to find power of any number using for loop. Don't use pow() function. Example:
Enter base: **2**
Enter power: **5**
2 to the power 5 = 32