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## Assignment 2

### Code:

```
/* C Program to calculate approximate value of pi( $\pi$ ) constant.
prompt the user to enter value as large the value is there would be approximate value
of pie.
*/
#include <stdio.h>

long double calculate_Pie(int no_of_terms); // Function that calculates the value.

int main() {
    int no_of_terms; // declaring the number of terms.
    long double approximate_value_of_Pi; // declaring the value of pi.

    printf("Enter the number of terms: "); // Prompt user to enter the number of terms.
    scanf("%d", &no_of_terms);

    if (no_of_terms < 1) // Condition to check either no of terms is positive or
negative.

    {
        printf("Please enter a positive integer for the number of terms.\n");
        return 0;
    }
    else //or if no of terms is positive .

    {
        approximate_value_of_Pi = calculate_Pie(no_of_terms); // calling the
calculate_Pie function
        printf("The approximate value of  $\pi$  is = %.15Lf\n",
approximate_value_of_Pi); // output with increased precision
    }

    return 0;
}

long double calculate_Pie(int no_of_terms)
```

```

{
long double Pie = 3.0; // initializing the value of pi as 3.0.

    for (int i = 1; i <= no_of_terms; i++)//loops iterates upto number of terms.

    {
        long double Numerator = 4 * i; // numerator will multiply with all values.
        long double Denominator = (2 * i) * (2 * i + 1) * (2 * i + 2); // denominator will
multiply series only even numbers.

        if (i % 2 == 1)
        {
            Pie += Numerator / Denominator; // add the term.
        }
        else
        {
            Pie -= Numerator / Denominator; // subtract the term.
        }
    }

    return Pie; // return approximate value of pi.
}

```

## Output:

```

muhammad@muhammad-Latitude-5490:~/Desktop$ ./a.out
Enter the number of terms: 100
The approximate value of n is = 3.122326468873710
muhammad@muhammad-Latitude-5490:~/Desktop$ ./a.out
Enter the number of terms: 1000
The approximate value of n is = 3.123267042167962

```