Numerical Integration Using Trapezoidal Method C Program

C program for **Trapezoidal Rule or Method** to find numerical integration. To learn algorithm about Trapezoidal rule follow article Trapezoidal Method Algorithm.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>

/* Define function here */
#define f(x) 1/(1+pow(x,2))

int main()
{
 float lower, upper, integration=0.0, stepSize, k;
 int i, subInterval;
 clrscr();
```

```c
    /* Input */
    printf("Enter lower limit of integration: ");
    scanf("%f", &lower);
    printf("Enter upper limit of integration: ");
    scanf("%f", &upper);
    printf("Enter number of sub intervals: ");
    scanf("%d", &subInterval);

    /* Calculation */
    /* Finding step size */
    stepSize = (upper - lower)/subInterval;

    /* Finding Integration Value */
    integration = f(lower) + f(upper);
    for(i=1; i<= subInterval-1; i++)
    {
     k = lower + i*stepSize;
     integration = integration + 2 * f(k);
    }
    integration = integration * stepSize/2;
    printf("\nRequired value of integration is: %.3f", integration);
    getch();
    return 0;
}
```

Trapezoidal Method C Program Output

```
Enter lower limit of integration: 0
Enter upper limit of integration: 1
Enter number of sub intervals: 6

Required value of integration is: 0.784
```

Recommended Readings

1. Numerical Integration Trapezoidal Method Algorithm
2. Numerical Integration Using Trapezoidal Method Pseudocode
3. Numerical Integration Using Trapezoidal Method C Program
4. Trapezoidal Rule Using C++ with Output
5. Numerical Integration Using Simpson 1/3 Method Algorithm

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