

```

1: // C - Program to calculate integral using Riemann sum (Left, Right &
   // Mid-Riemann sum).
2:
3: #include <stdio.h>
4: #include <math.h>
5:
6: //Definition of a function => f(x^3)
7: double f(double x){
8:     double s = x*x*x;
9:     return s;
10: }
11:
12: void main(){
13:     //Variables and their initialization.
14:     double a, b; int n, i;
15:     double lsum = 0.0, msum = 0.0, rsum = 0.0;
16:
17:     //Inputs
18:     printf("Enter Lower Limit (a): ");
19:     scanf("%lf", &a);
20:     printf("Enter Upper Limit (b): ");
21:     scanf("%lf", &b);
22:     printf("Enter No. of strips (n): ");
23:     scanf("%d", &n);
24:
25:     //Calculation of width of rectangular strips.
26:     double h = fabs(b - a)/n;
27:     msum += (h/2)*(f(a)+f(b));
28:
29:     //Left-Riemann Sum
30:     for ( i = 0; i < n; i++){
31:         lsum += h*(f(a + (i*h)));
32:     }
33:
34:     //Right-Riemann Sum
35:     for (i = 1; i < n+1; i++){
36:         rsum += h*(f(a + (i*h)));
37:     }
38:
39:     //Mid-Riemann Sum
40:     for (i = 1; i < n; i++){
41:         msum += (h/2)*(2*f(a + (i*h)));
42:     }
43:
44:     //Output
45:     printf("Required integral using Left-Riemann Sum = %lf\n", lsum);

```

```
46:     printf("Required integral using Mid-Riemann Sum = %lf\n", msum);
47:     printf("Required integral using Right-Riemann Sum = %lf", rsum);
48: }
```