

```
/*Implementation of Numerical Integration by Simpson 1/3rd Rule.  
Coded by Ashwini Kumar Singh on 22-March-2021*/
```

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

```
float f(float x) {  
    return (1/(1+pow(x,2)));  
}
```

```
int main(void) {
```

```
printf("\n*****\n");
```

```
    printf("\nImplementation of Numerical Integration by Simpson 1/3rd Rule\n");
```

```
    printf("\nFor the Function :  $y = f(x) = 1/(1+pow(x,2))$ \n");
```

```
    printf("\nCoded by Ashwini Kumar Singh on 22-March-2021\n");
```

```
printf("\n*****\n");
```

```
    int i,n;
```

```
    float x0,xn,h,y[20],so=0.0,se=0.0,ans,x[20];
```

```
    printf("\n Enter values of x0,xn,h: ");
```

```
    scanf("%f,%f,%f",&x0,&xn,&h);
```

```
    n=floor((xn-x0)/h);
```

```
    if(n%2==1) {
```

```
        n=n+1;
```

```
    }
```

```
    h=(xn-x0)/n;
```

```
    printf("\nRefined value of n and h are: %d %f\n",n,h);
```

```
printf("\n Y[i] values \n===== \n");
for(i=0; i<=n; i++){
    x[i]=x0+i*h;
    y[i]=f(x[i]);
    printf("\nY[%d] = %f\n",i,y[i]);
}

for(i=1; i<n; i++){
    if(i%2==1){
        so=so+y[i];
    }
    else{
        se=se+y[i];
    }
}

ans=(h/3)*(y[0]+y[n]+4*so+2*se);

printf("\nFinal integration is %f",ans);
return 0;
}
```