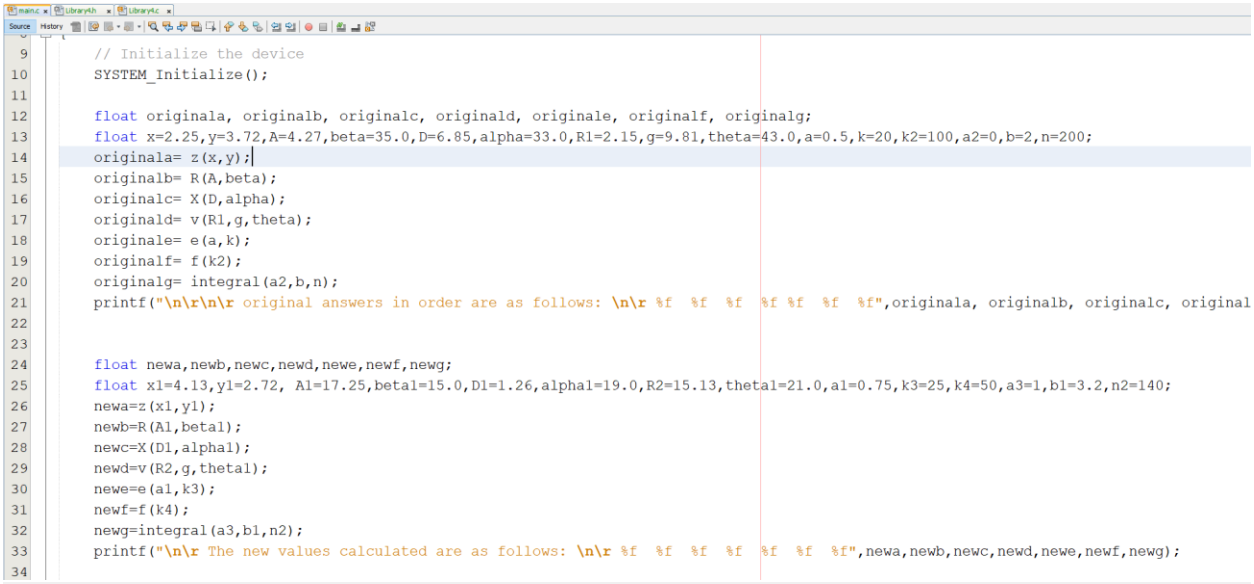
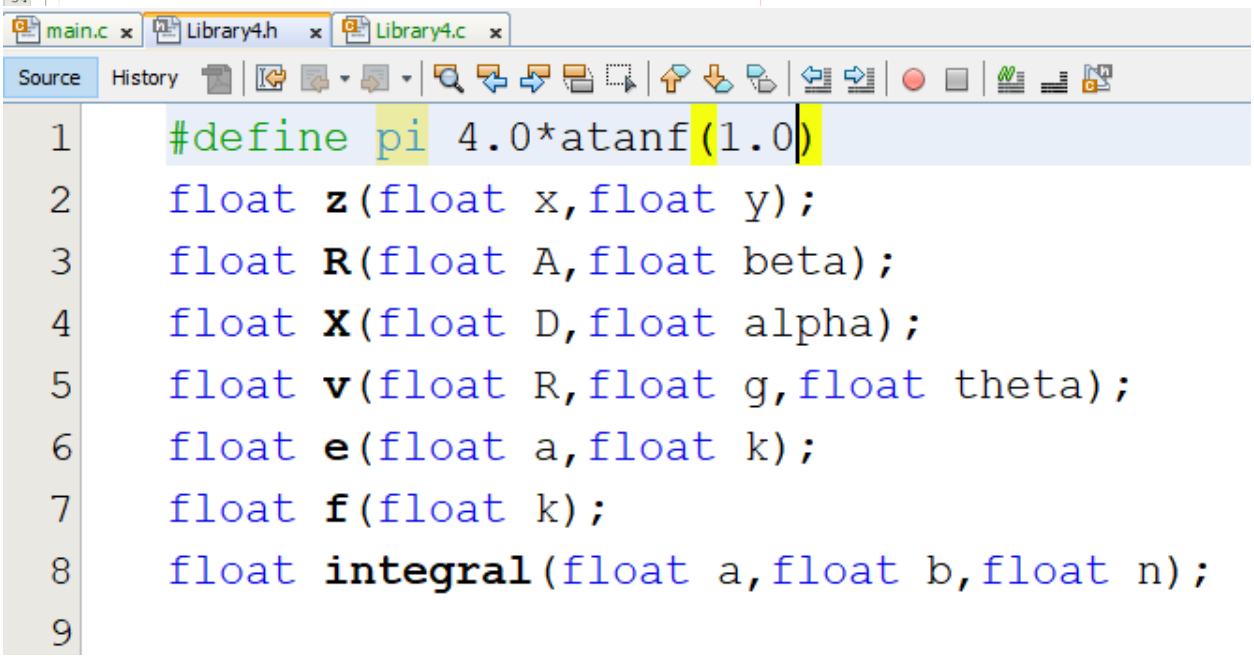
The putty shows same answers before and after and the Libraries are included with separate functions called in main file.



```
    // Initialize the device
    SYSTEM_Initialize();

    float originala, originalb, originalc, originald, originale, originalf, originalg;
    float x=2.25,y=3.72,A=4.27,beta=35.0,D=6.85,alpha=33.0,R1=2.15,g=9.81,theta=43.0,a=0.5,k=20,k2=100,a2=0,b=2,n=200;
    originala= z(x,y);
    originalb= R(A,beta);
    originalc= X(D,alpha);
    originald= v(R1,g,theta);
    originale= e(a,k);
    originalf= f(k2);
    originalg= integral(a2,b,n);
    printf("\n\r\n\r original answers in order are as follows: \n\r %f  %f  %f  %f %f  %f  %f",originala, originalb, originalc, original


    float newa,newb,newc,newd,newe,newf,newg;
    float x1=4.13,y1=2.72, A1=17.25,beta1=15.0,D1=1.26,alpha1=19.0,R2=15.13,theta1=21.0,a1=0.75,k3=25,k4=50,a3=1,b1=3.2,n2=140;
    newa=z(x1,y1);
    newb=R(A1,beta1);
    newc=X(D1,alpha1);
    newd=v(R2,g,theta1);
    newe=e(a1,k3);
    newf=f(k4);
    newg=integral(a3,b1,n2);
    printf("\n\r The new values calculated are as follows: \n\r %f  %f  %f  %f  %f  %f  %f",newa,newb,newc,newd,newe,newf,newg);
```



main.c | Library4.h | Library4.c

Source | History

```
1   #define pi 4.0*atanf(1.0)
2   float z(float x,float y);
3   float R(float A,float beta);
4   float X(float D,float alpha);
5   float v(float R,float g,float theta);
6   float e(float a,float k);
7   float f(float k);
8   float integral(float a,float b,float n);
9
```

main.c | Library4.h | Library4.c

Source | History

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <math.h>

#include "Library4.h"


float z(float x,float y)
{
    float z;
    z= sqrt(pow(x,2)+pow(y,2));
    return z;
}
float R(float A,float beta)
{
    float R;
    R= A*cos(beta*pi/180);
    return R;
}

float X(float D,float alpha)
{
    float X;
    X=D*pow(tan(alpha*pi/180),2);
    return X;
}

```

main.c | Library4.h | Library4.c

Source | History

```
28
29    float v(float R,float g,float theta)
30    {
31        float v;
32        v= sqrt(R*g*tan(theta*pi/180));
33        return v;
34    }
35
36    float e(float a,float k)
37    {
38        int i=0;
39        float sumK=0;
40
41        for(i=0;i<=k;i++)
42        {
43            sumK += pow(0.5,i);
44        }
45        return sumK;
46    }
47
48    float f(float k)
49    {
50        int l=0, sumL=0;
51
52        for(l=0;l<=k;l++)
53        {
54            sumL += l;
55        }
```

e

main.c | Library4.h | Library4.c

Source | History

```
58
59  float integral(float a,float b,float n)
60  {
61
62      int i=0;
63
64      float deltax= (b-a)/n; //delta x for the approximated integral solution
65
66      float X=0, X1=0, Xn=0, sum1=0, sum2=0; // the Simpson's rule terms up to f of Xn
67
68      for(i=0;i<=n;i++)
69      {
70          X1=0.5*i;
71          if(i==0)
72          {
73              X1= 0.5*a;
74
75          }
76          else
77              {
78                  if(i==n)
79                      {
80                      Xn=0.5*b;
81                      }
82                      else
83                          {
84                              if(i%2 == 0)
85                              {
```

COM4 - PuTTY

```
original answers in order are as follows:
4.347517  3.497779  2.888852  4.434878 1.999999  5050.000000  1.333333
The new values calculated are as follows:
4.945230  16.662221  0.149387  7.548188  2.000000  1275.000000  2.674048

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