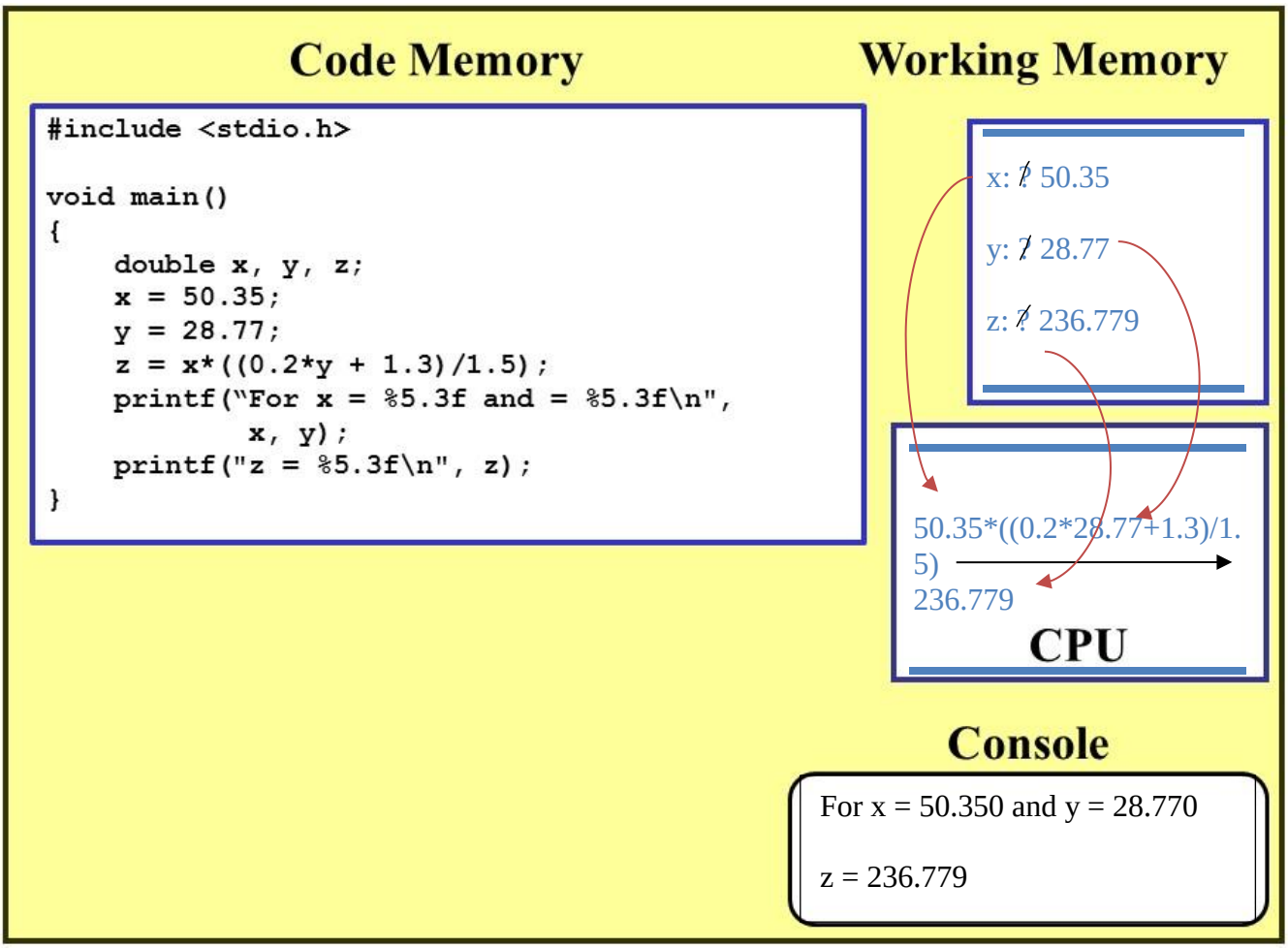
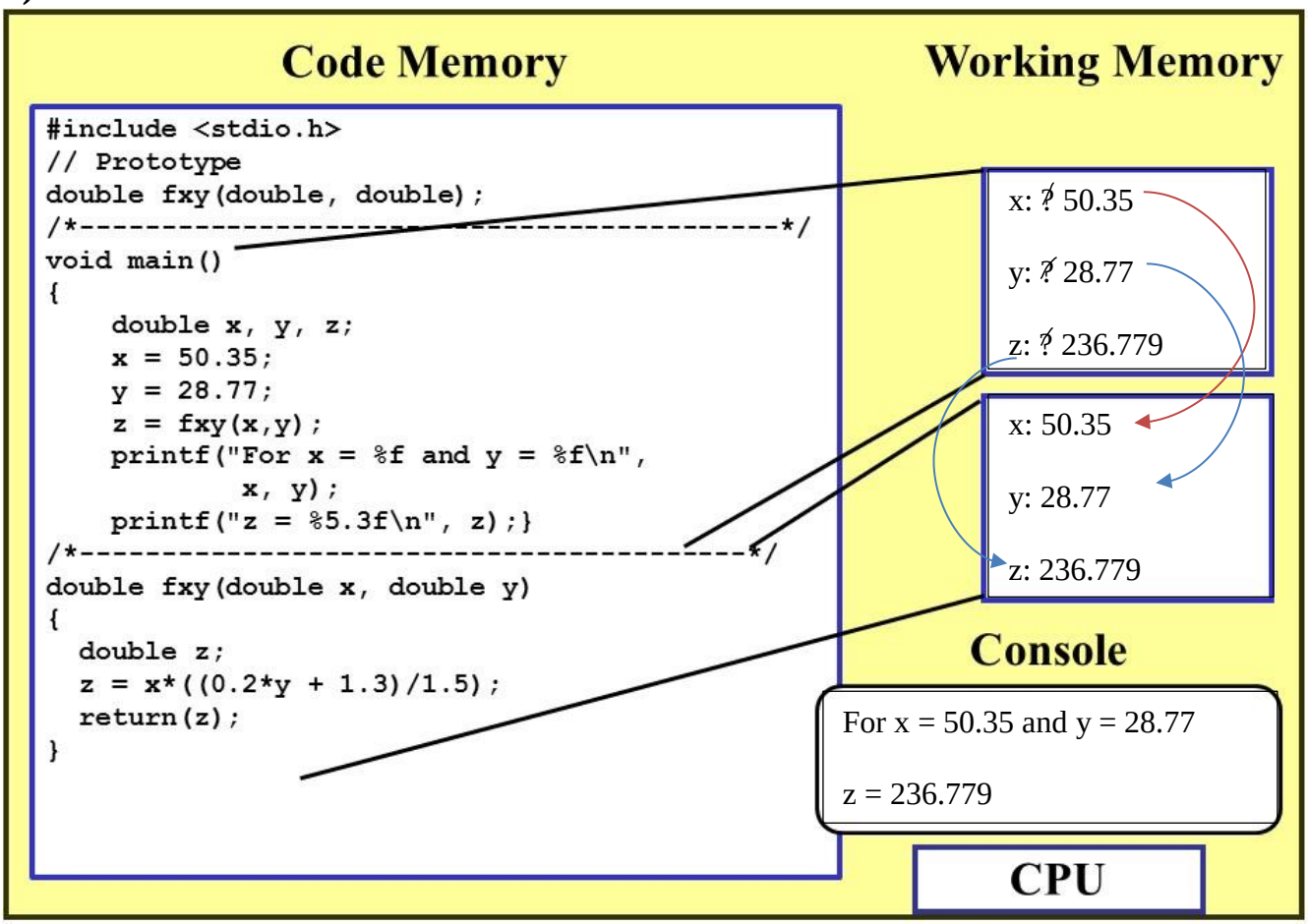
GNG1106 Fall 2017 – Assignment 1

1. a)

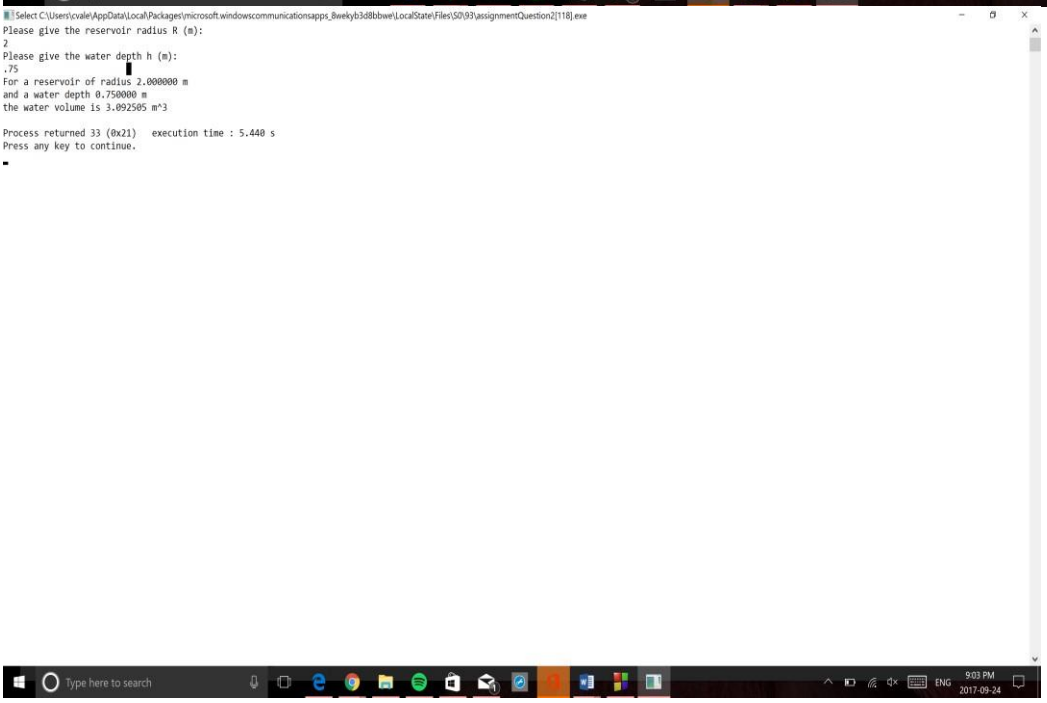


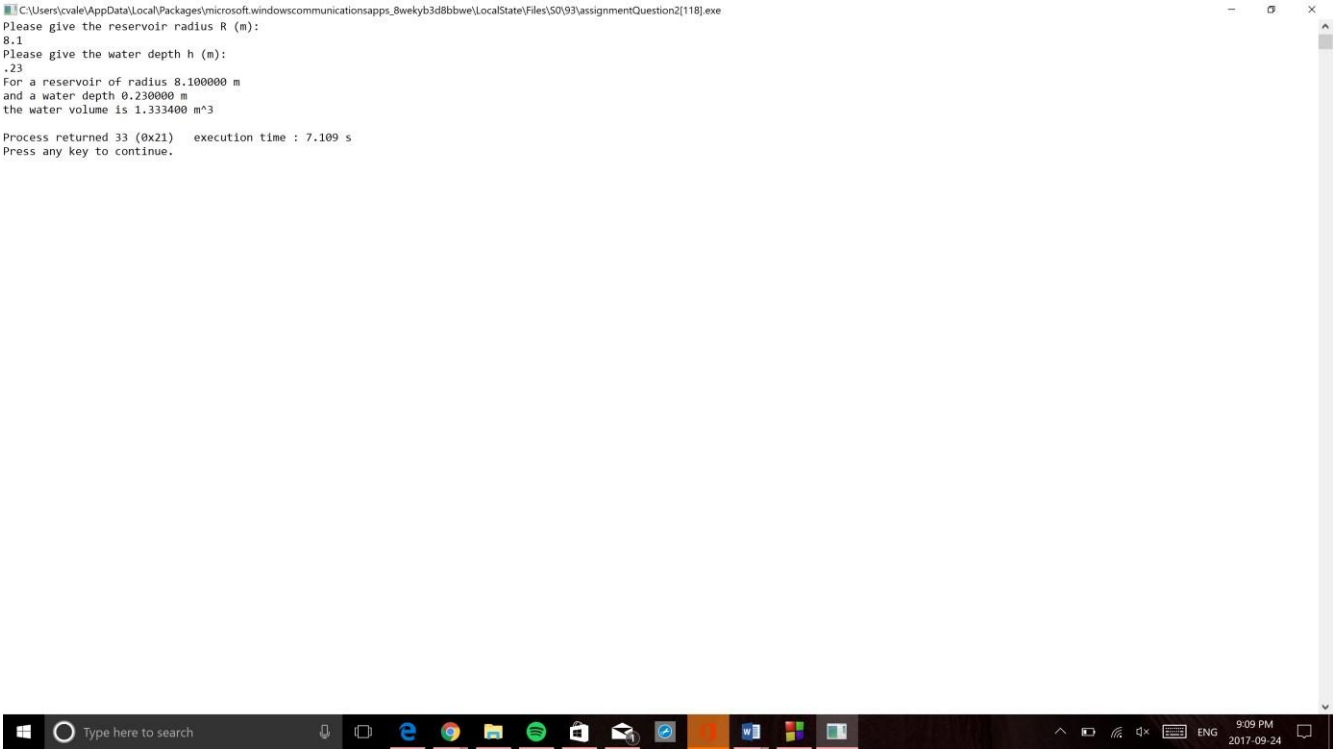
b)

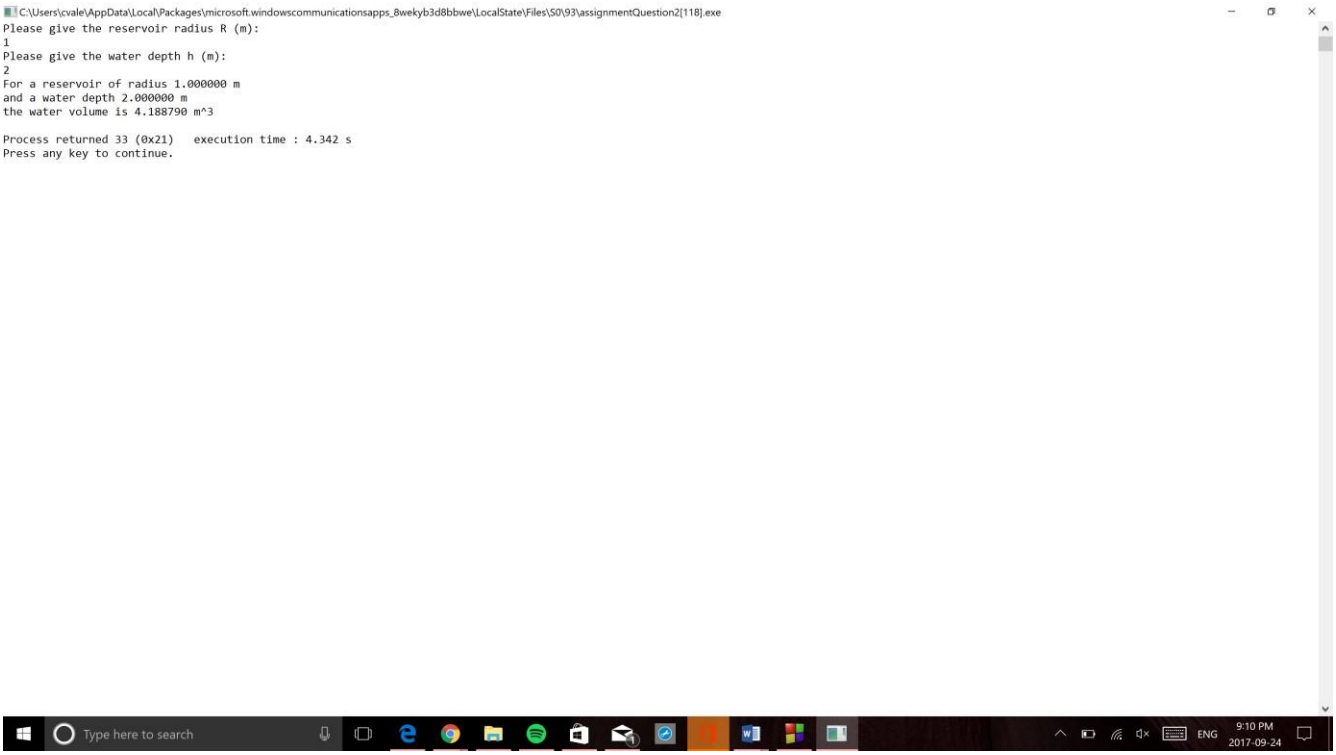

Code Memory
Working Memory
#include <stdio.h>
// Prototype
double fxy(double, double);
/*--*/
void main()
{
double x, y, z;
x = 50.35;
y = 28.77;
z = fxy(x,y);
printf("For x = %f and y = %f\n",
x, y);
printf("z = %5.3f\n", z);}
/*--*/
double fxy(double x, double y)
{
double z;
z = x*((0.2*y + 1.3)/1.5);
return(z);
}
x: ? 50.35
y: ? 28.77
z: ? 236.779
x: 50.35
y: 28.77
z: 236.779
Console
For x = 50.35 and y = 28.77
z = 236.779
CPU

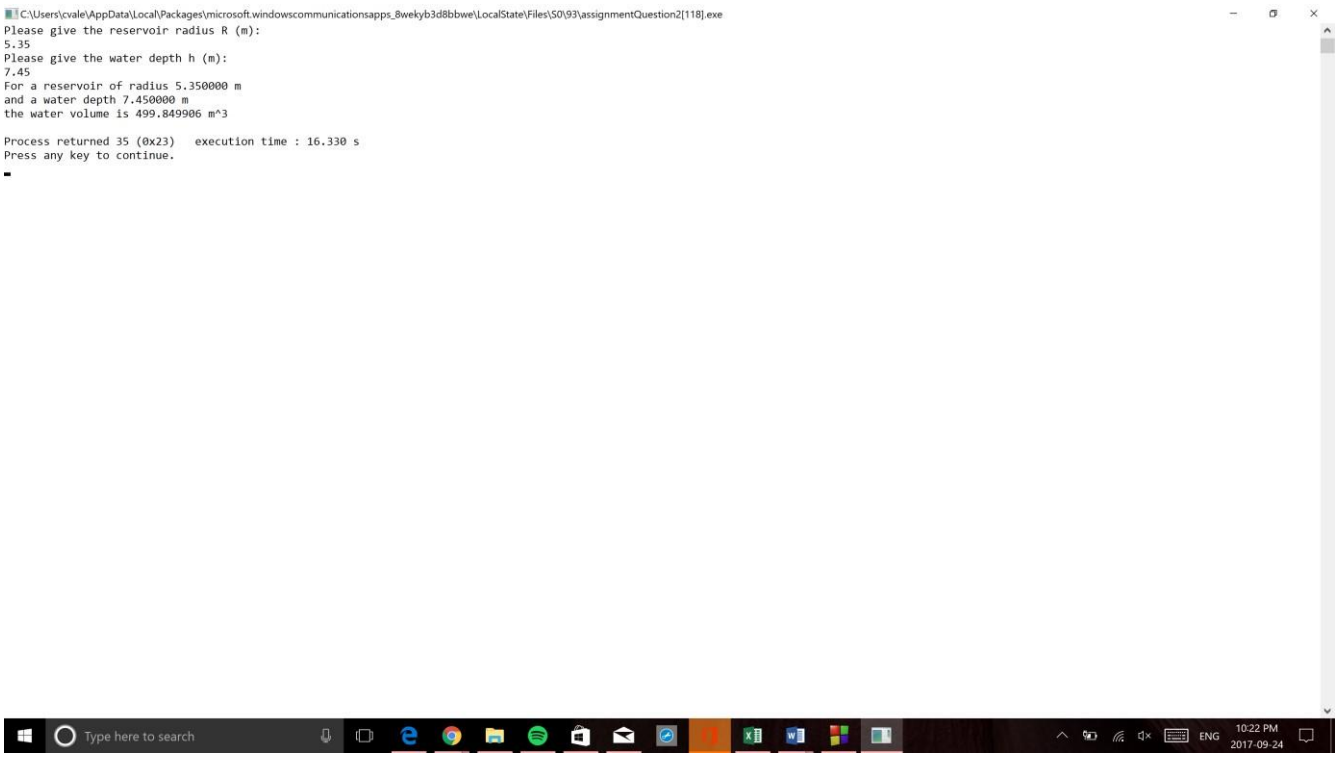
2.


C:\Users\cvale\AppData\Local\Packages\microsoft.windowscommunicationsapps_8wekyb3d8bbwe\LocalState\Files\S0\93\assignmentQuestion2[118].exe
Please give the reservoir radius R (m):
2
Please give the water depth h (m):
2
For a reservoir of radius 2.000000 m
and a water depth 2.000000 m
the water volume is 16.755161 m^3
Process returned 34 (0x22) execution time : 5.528 s
Press any key to continue.
Type here to search
ENG
9:06 PM
2017-09-24


Select C:\Users\cvale\AppData\Local\Packages\microsoft.windowscommunicationsapps_8wekyb3d8bbwe\LocalState\Files\S0\93\assignmentQuestion2[118].exe
Please give the reservoir radius R (m):
2
Please give the water depth h (m):
.75
For a reservoir of radius 2.000000 m
and a water depth 0.750000 m
the water volume is 3.092505 m^3
Process returned 33 (0x21) execution time : 5.440 s
Press any key to continue.
Type here to search
ENG
9:03 PM
2017-09-24

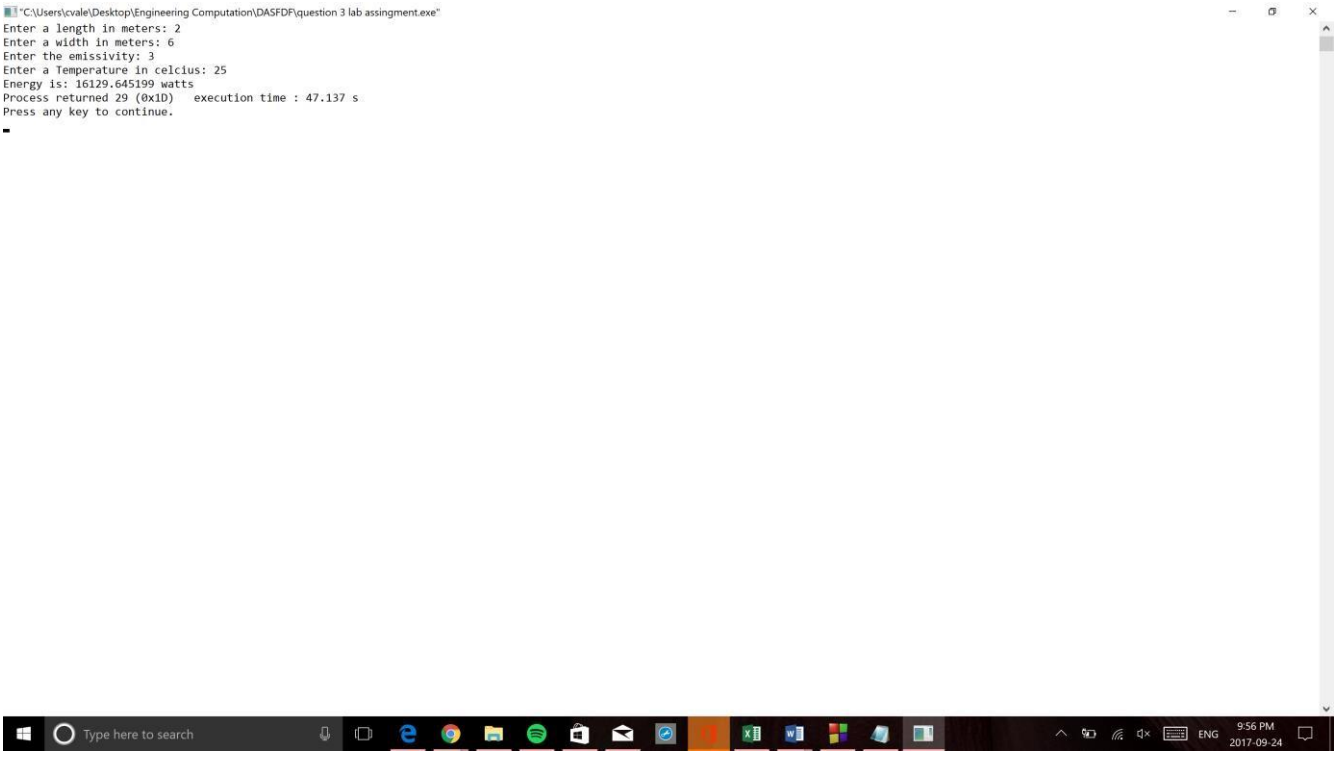

C:\Users\cvale\AppData\Local\Packages\microsoft.windowscommunicationsapps_8wekyb3d8bbwe\LocalState\Files\S0\93\assignmentQuestion2[118].exe
Please give the reservoir radius R (m):
8.1
Please give the water depth h (m):
.23
For a reservoir of radius 8.100000 m
and a water depth 0.230000 m
the water volume is 1.333400 m^3
Process returned 33 (0x21) execution time : 7.109 s
Press any key to continue.
Type here to search
ENG
9:09 PM
2017-09-24

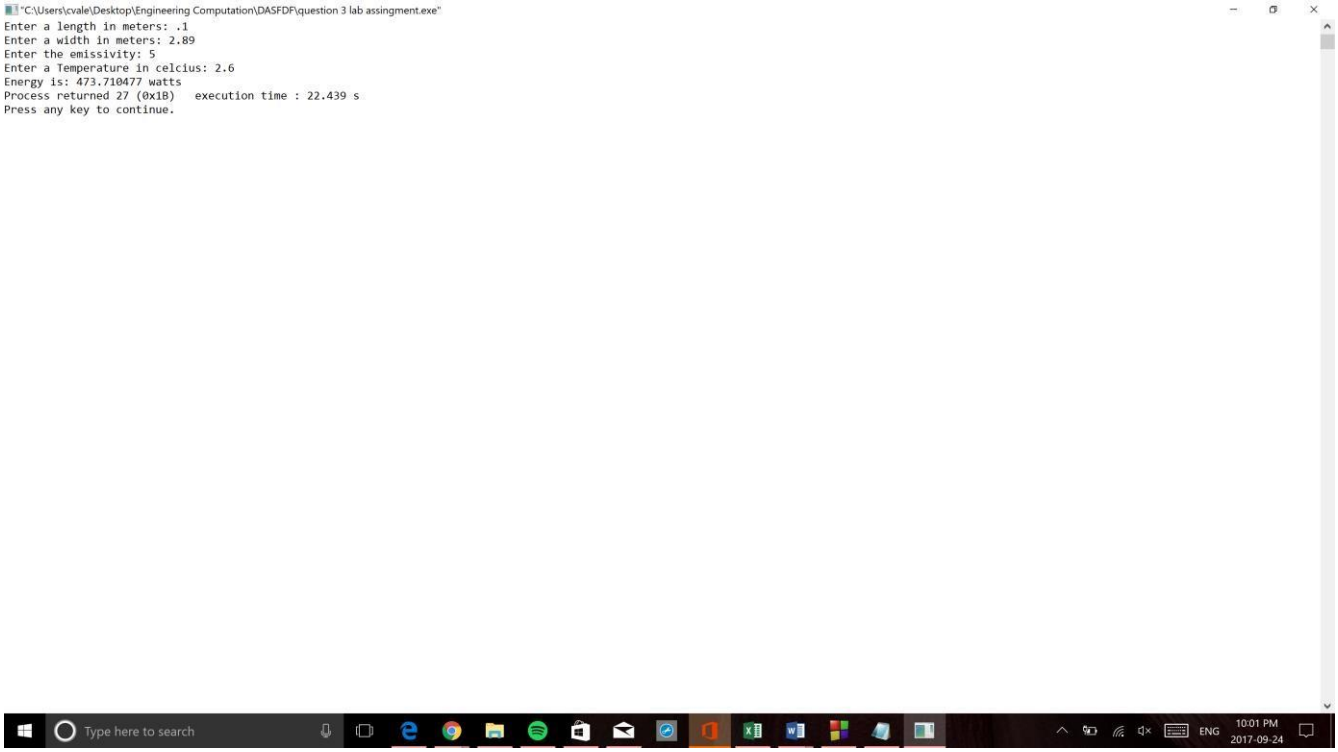

C:\Users\cvale\AppData\Local\Packages\microsoft.windowscommunicationsapps_8wekyb3d8bbwe\LocalState\Files\S0\93\assignmentQuestion2[118].exe
Please give the reservoir radius R (m):
1
Please give the water depth h (m):
2
For a reservoir of radius 1.000000 m
and a water depth 2.000000 m
the water volume is 4.188790 m^3
Process returned 33 (0x21) execution time : 4.342 s
Press any key to continue.
Type here to search
ENG
9:10 PM
2017-09-24

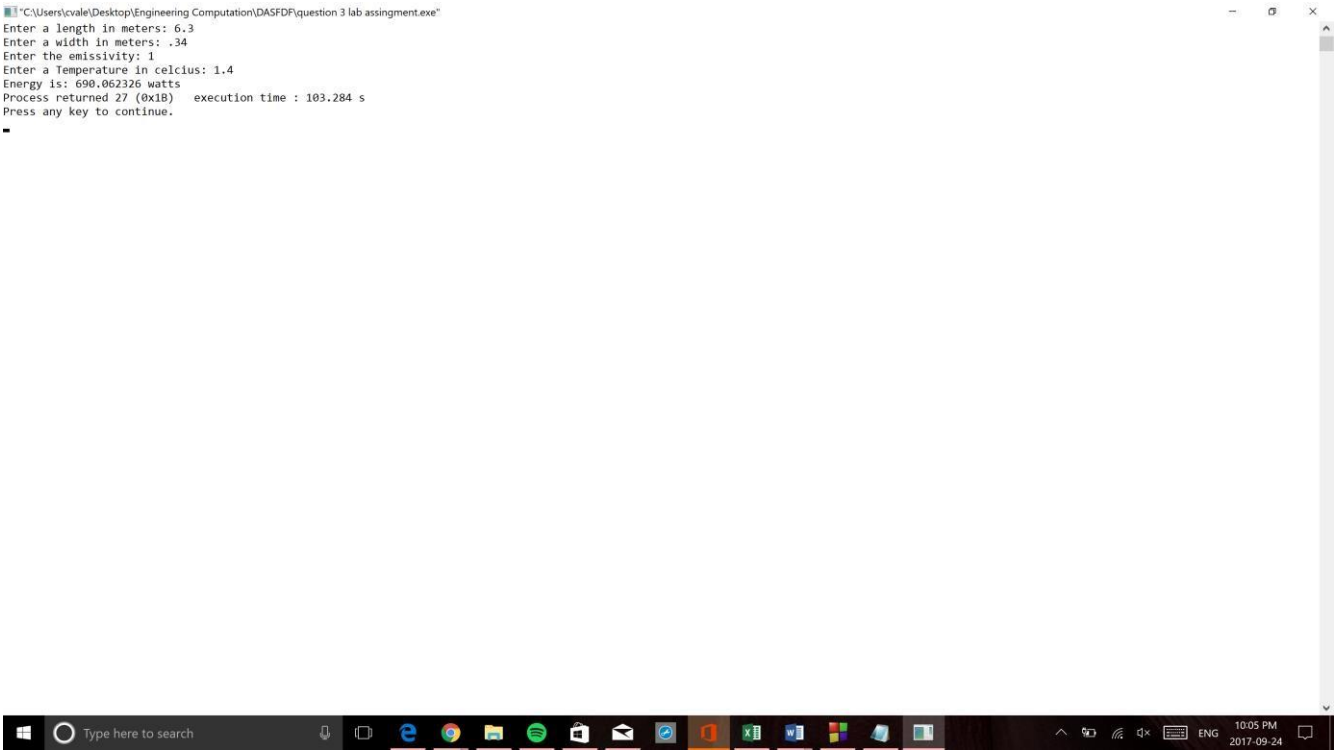

C:\Users\cvale\AppData\Local\Packages\microsoft.windowscommunicationsapps_8wekyb3d8bbwe\LocalState\Files\S0\93\assignmentQuestion2[118].exe
Please give the reservoir radius R (m):
5.35
Please give the water depth h (m):
7.45
For a reservoir of radius 5.350000 m
and a water depth 7.450000 m
the water volume is 499.849906 m^3
Process returned 35 (0x23) execution time : 16.330 s
Press any key to continue.
Type here to search
ENG
10:22 PM
2017-09-24

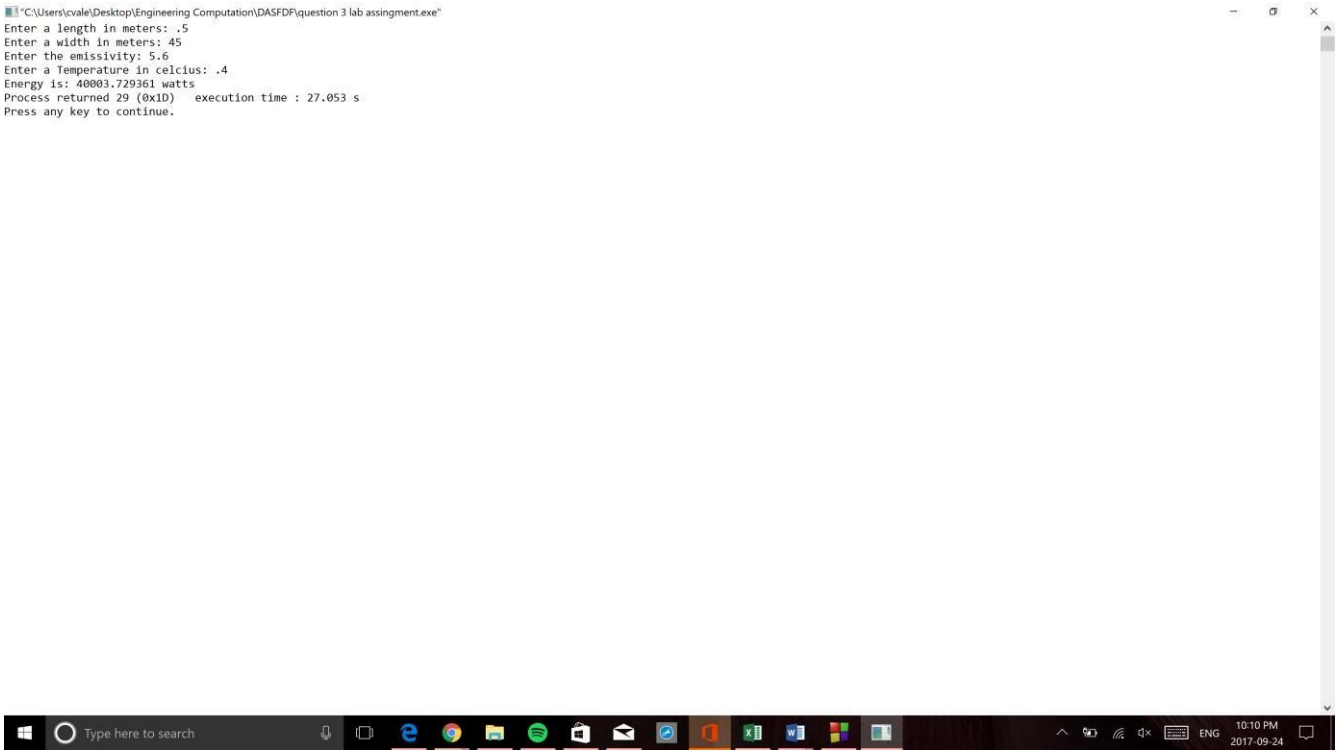
3.

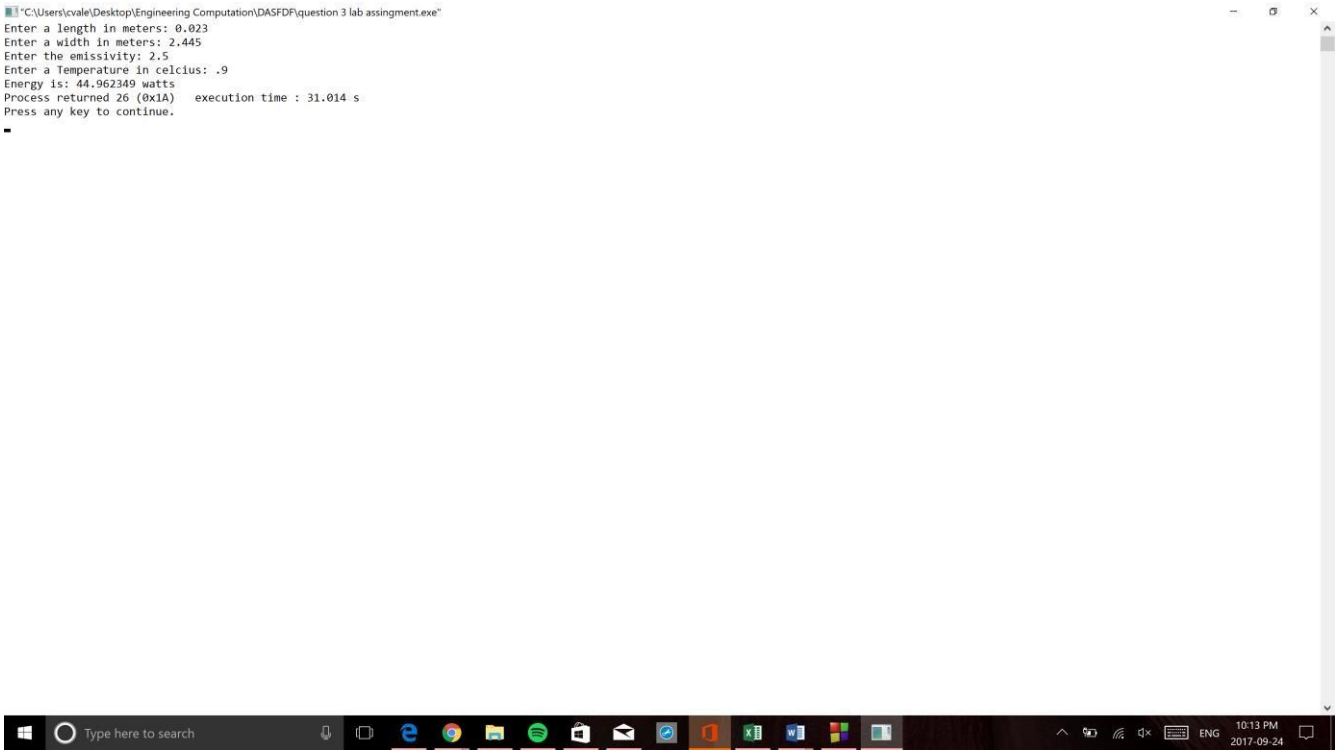
Length (m)	Width (m)	Emissivity	Temperature (*C)	Energy (W)
2	6	3	25	16129.645199
0.1	2.89	5	2.6	473.710477
6.3	0.34	1	1.4	690.062326
0.5	45	5.6	0.4	40003.729361
0.023	2.445	2.5	0.9	44.962349




"C:\Users\cvale\Desktop\Engineering Computation\DASFDF\question 3 lab assingment.exe"
Enter a length in meters: .1
Enter a width in meters: 2.89
Enter the emissivity: 5
Enter a Temperature in celcius: 2.6
Energy is: 473.710477 watts
Process returned 27 (0x1B)   execution time : 22.439 s
Press any key to continue.
Type here to search
ENG
10:01 PM
2017-09-24


"C:\Users\cvale\Desktop\Engineering Computation\DASFDF\question 3 lab assingment.exe"
Enter a length in meters: 6.3
Enter a width in meters: .34
Enter the emissivity: 1
Enter a Temperature in celcius: 1.4
Energy is: 690.062326 watts
Process returned 27 (0x1B)   execution time : 103.284 s
Press any key to continue.
Type here to search
ENG
10:05 PM
2017-09-24


"C:\Users\cvale\Desktop\Engineering Computation\DASFDF\question 3 lab assingment.exe"
Enter a length in meters: .5
Enter a width in meters: 45
Enter the emissivity: 5.6
Enter a Temperature in celcius: .4
Energy is: 40003.729361 watts
Process returned 29 (0x1D)   execution time : 27.053 s
Press any key to continue.
Type here to search
ENG
10:10 PM
2017-09-24


"C:\Users\cvale\Desktop\Engineering Computation\DASFDF\question 3 lab assingment.exe"
Enter a length in meters: 0.023
Enter a width in meters: 2.445
Enter the emissivity: 2.5
Enter a Temperature in celcius: .9
Energy is: 44.962349 watts
Process returned 26 (0x1A)   execution time : 31.014 s
Press any key to continue.
Type here to search
ENG
10:13 PM
2017-09-24

Code: Question 2

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

double calculateVolume(double, double);

double main()
{
  double r, h, vol;                                    //Declaring variables and their types

  printf("Please give the reservoir radius R (m):\n");
  scanf("%lf", &r);              //Prompting user to input values and declaring these values as their appropriate variables

  printf("Please give the water depth h (m):\n");
  scanf("%lf", &h);              //Prompting user to input values and declaring these values as their appropriate variables

  vol=calculateVolume(r, h);    //calling the function "calculateVolume" to the main function and declaring it as vol

  printf("For a reservoir of radius %.6lf m\n", r);
printf("and a water depth %.6lf m\n", h);
  printf("the water volume is %.6lf m^3\n", vol);

}
double calculateVolume (double r, double h)       //creating new function to calculate the volume

{
    double vol;
    vol= M_PI*pow(h,2)*((3*r-h)/3);                    //Declaring Volume as a value that's calculated with this formula
    return vol;                                        //Returning the value of the volume back to the main function

}
```

Code: Question 3

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

double CalculateRadiation (double,double,double);

void main()
{
   double          l,w,e,T,SA,y,c;                              //Declaring variables and their types
double Tempk;
   printf ("Enter a length in meters: ");
scanf ("%lf", &l);
   printf ("Enter a width in meters: ");
scanf ("%lf", &w);
   printf ("Enter the emissivity: ");
scanf ("%lf", &e);
   printf ("Enter a Temperature in celcius: ");
   scanf ("%lf", &T);                                           // Prompting user to input values and declaring
those values as their appropriate variables

   SA = l*w;                                                                    //Declaring SA (surface area) as
l*w

   Tempk = (T+273.15);                                          //Declaring Tempk(temp in kelvin) as temp in
celcius + 273.15

   y = CalculateRadiation (Tempk,SA,e);  declaring     //calling the function "CalculateRadiation" to the main function and
it as variable y

   printf("Energy is: %lf watts", y);                           //Finally outputting the Energy based on the values the user
has given

}


double CalculateRadiation (double Tempk, double SA, double e) //creating new function to calculate radiation/energy
{
 double Energy;
 Energy = (SA*e*5.67e-8*(Tempk*Tempk*Tempk*Tempk));           // declaring energy as a value that's calculated with
the equation

 return (Energy);                                             //returning the value of energy to the main function
}
```