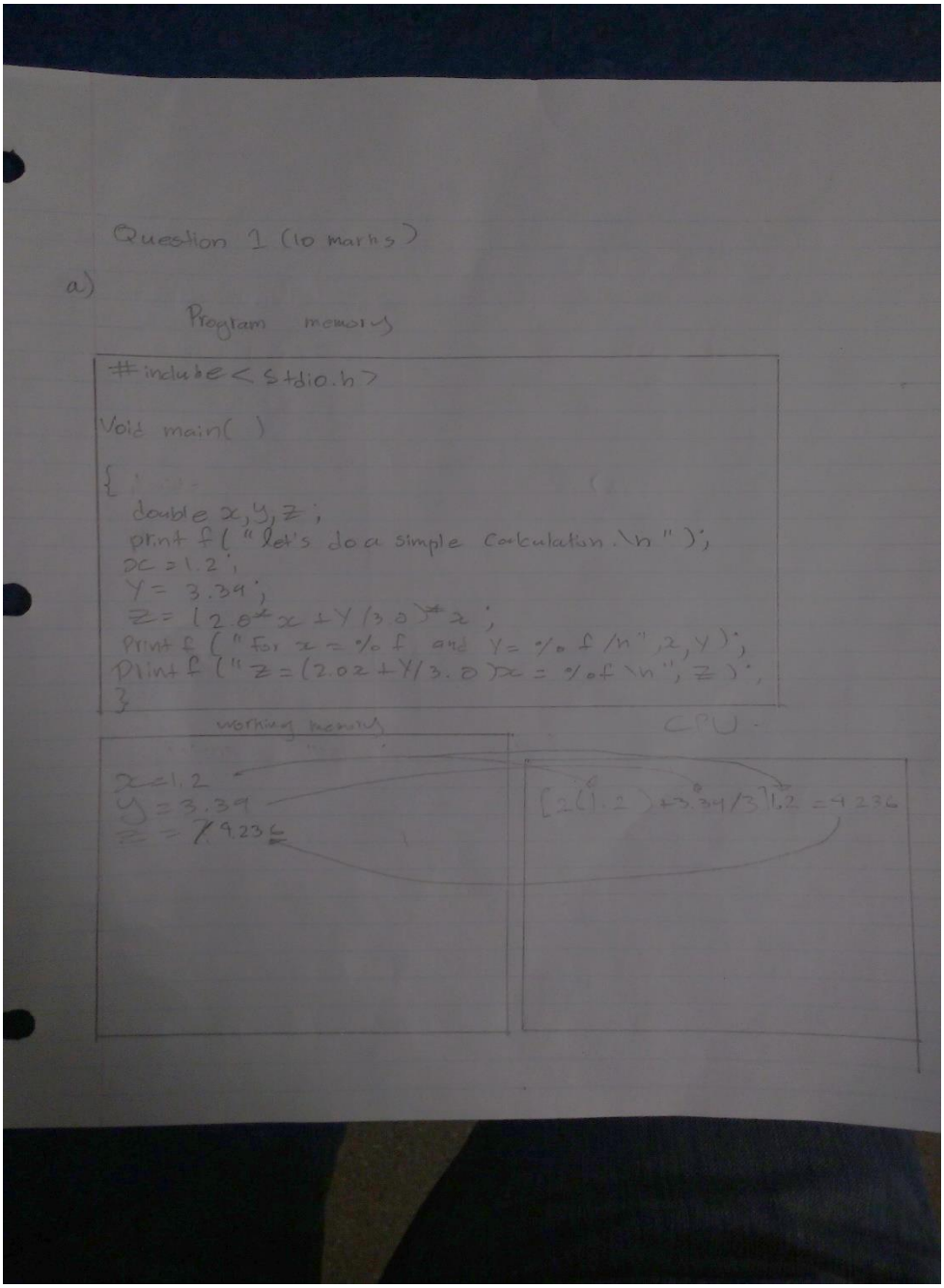
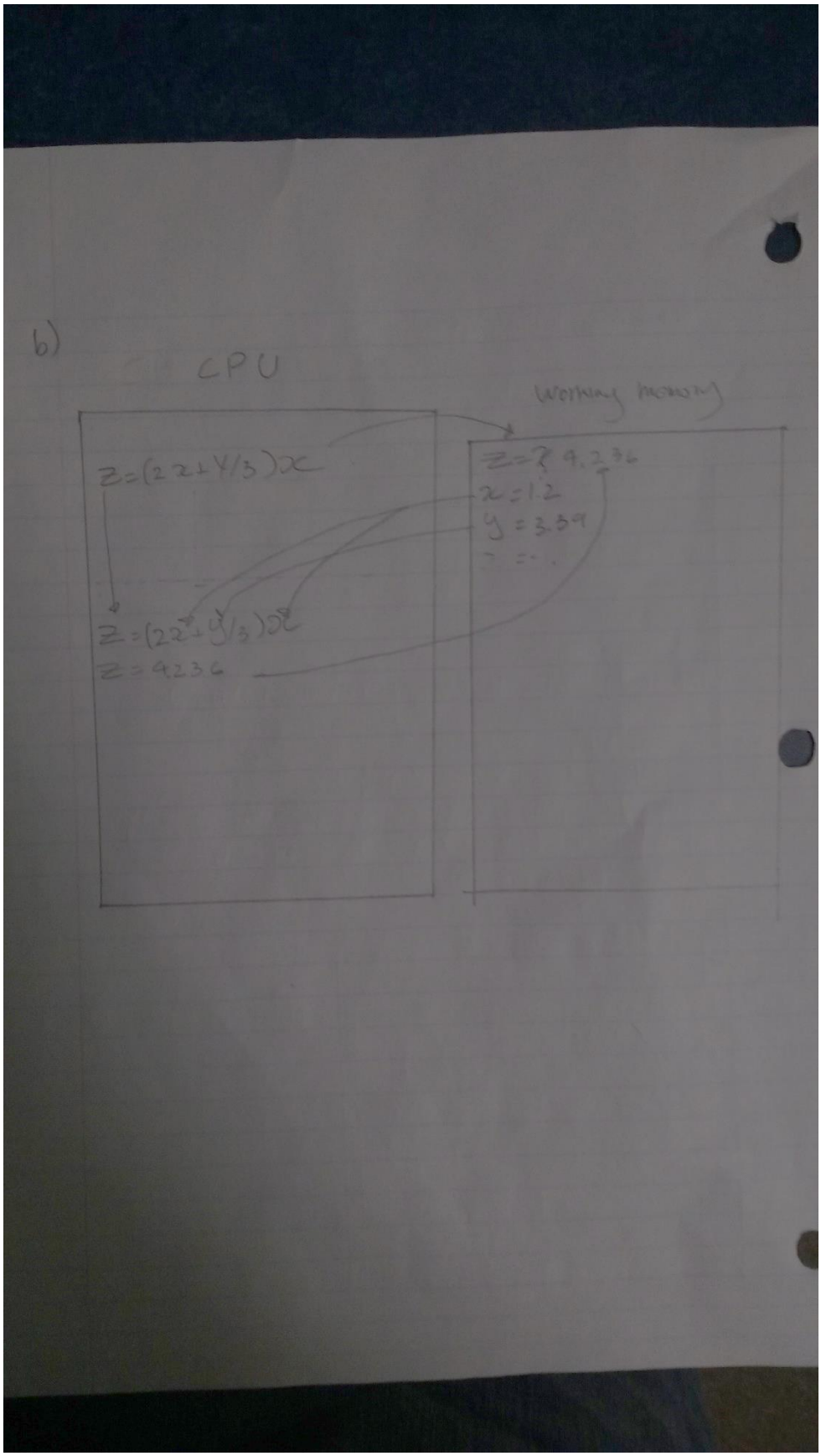
Question 1

A)


Question 1 (10 marks)
a)
Program memory
#include <stdio.h>
Void main( )
{
double x,y,z;
printf("let's do a simple Calculation.\n");
x=1.2;
y=3.39;
z=(2.0*x+y/3.0)*x;
Printf("for x=%f and y=%f/n",x,y);
Printf("z=(2.02+y/3.0)x=%of\n",z);
}
working memory
CPU
x=1.2
y=3.39
z=/9.236
[2(1.2)+3.39/3]1.2=9.236

b)

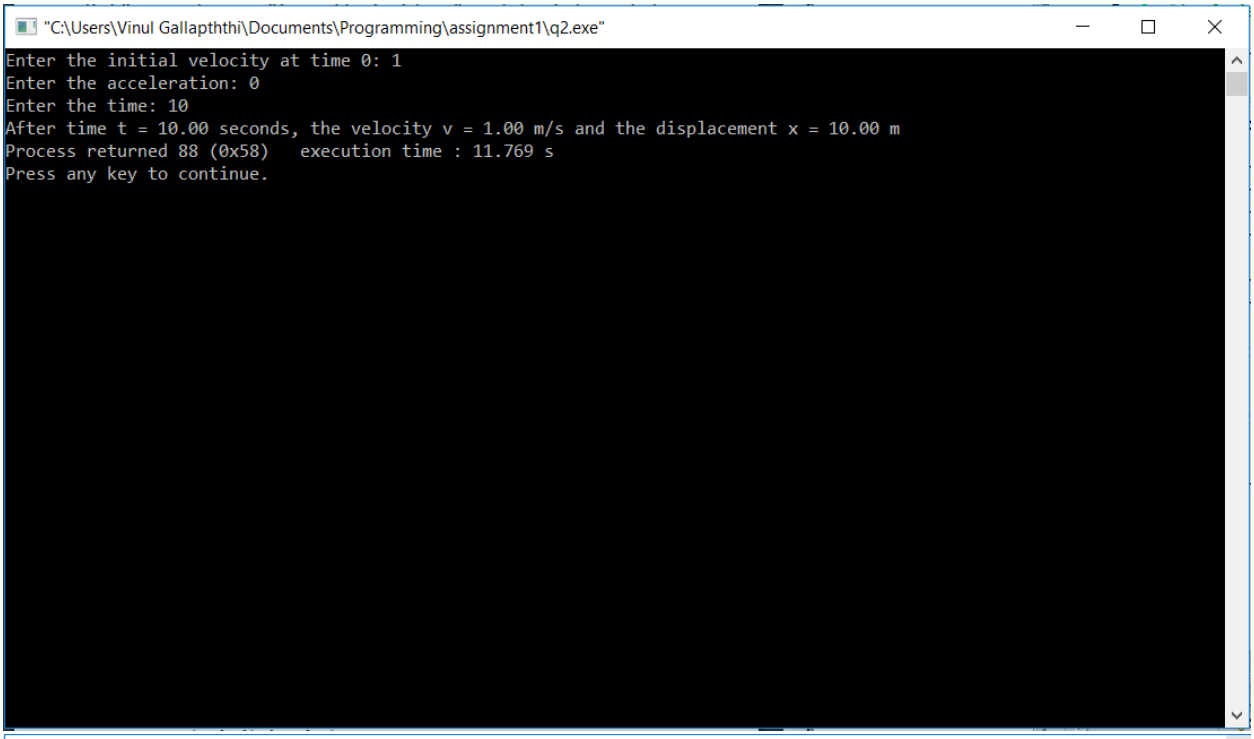


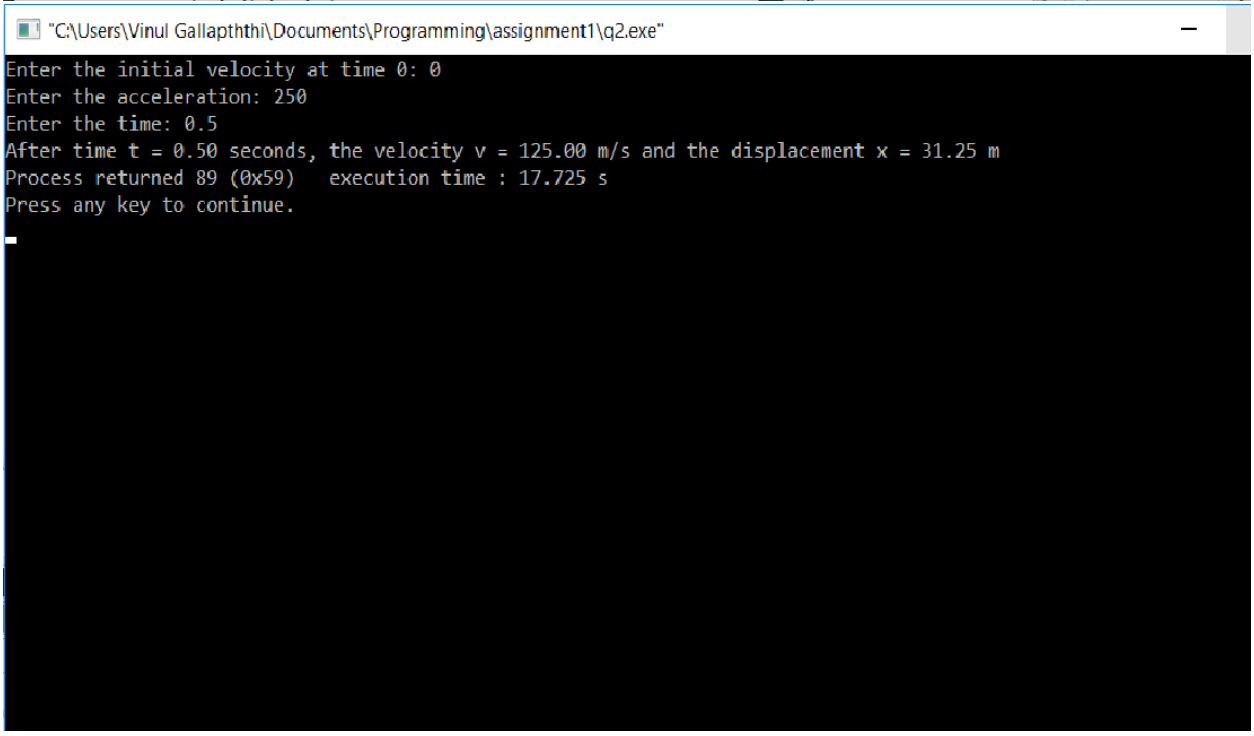
2.

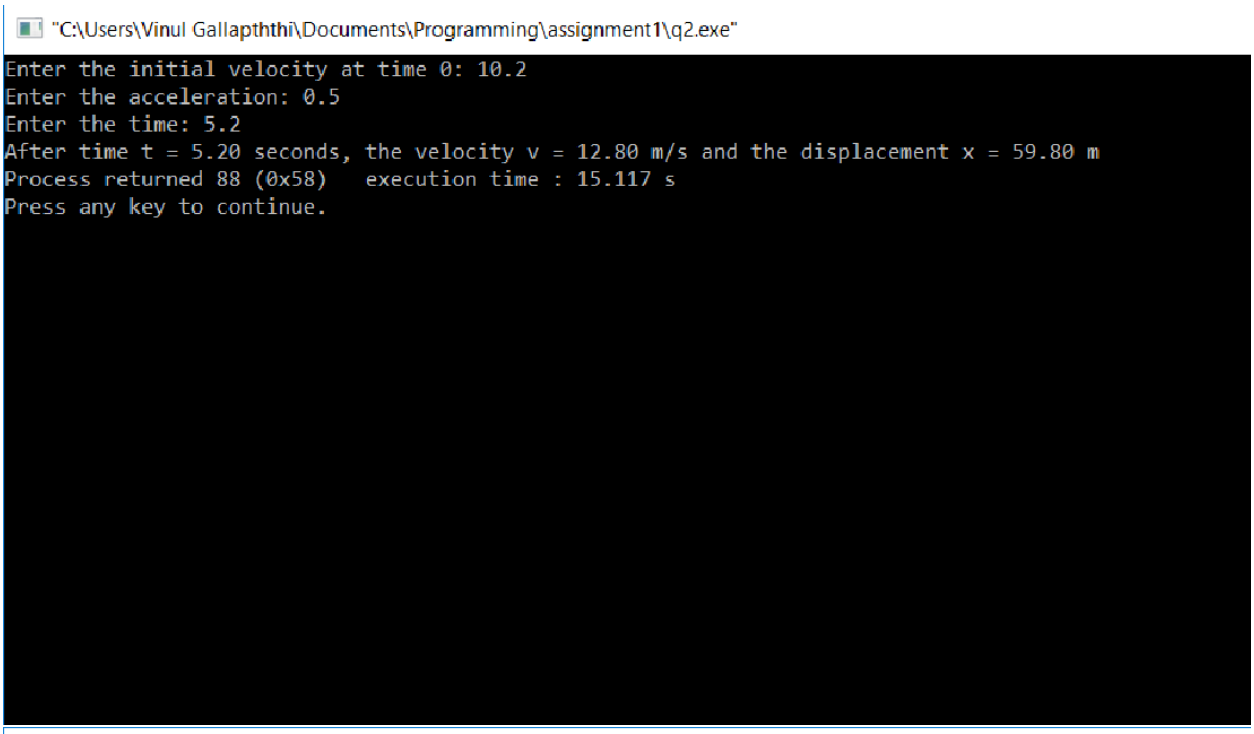
```
//  main.c
//  Question2



#include <stdio.h>

int main(int argc, const char * argv[]) {

   //declaring variables
   double v0, a, t, v, x;

   printf("Enter the initial velocity at time 0: ");
   scanf("%lf", &v0); //getting the initial velocity from user and storing it in the variable v0
   printf("Enter the acceleration: ");
   scanf("%lf", &a);//getting the acceleration from user and storing it in the the variable a

   printf("Enter the time: ");
   scanf("%lf", &t);//getting the time from user and storing it in the variable t

   //Formula to find the final velocity: v(final) = v(initial) + a*t
   v = v0 + (a*t);

   //Formula to find the distance:s=(time*(v1+v2)/2)
   x = ((v0+v)*t)/2;
   printf("After time t = %.2f seconds, the velocity v = %.2f m/s and the displacement x = %.2f m", t, v,
x);// by using %.2f it will convert to 2 decimal places
```

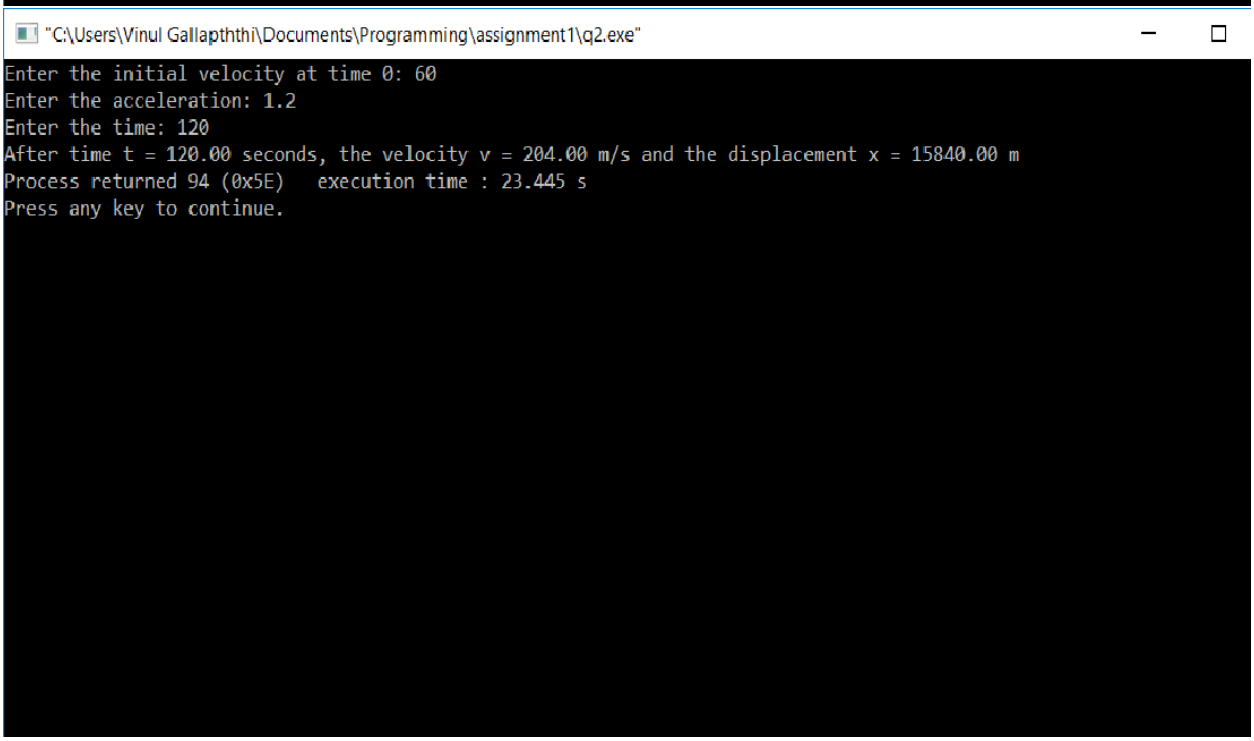
}

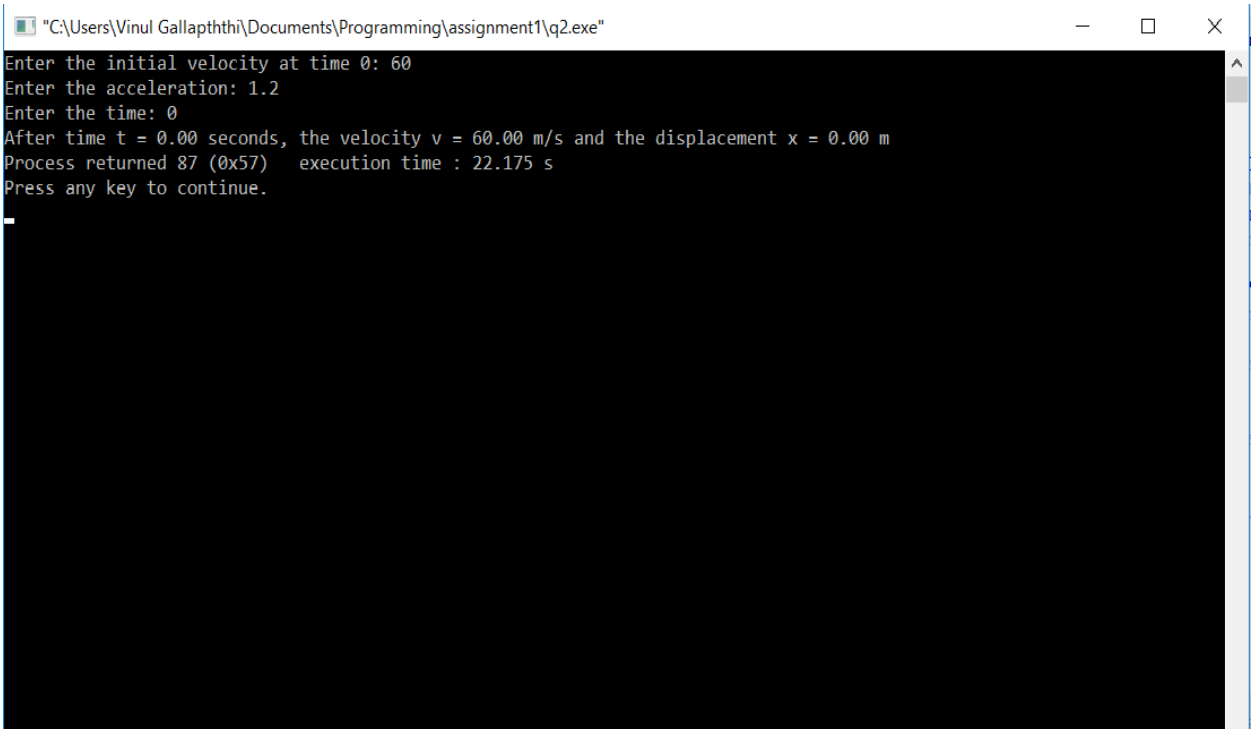
Test cases 1-5






"C:\Users\Vinul Gallapththi\Documents\Programming\assignment1\q2.exe"
Enter the initial velocity at time 0: 10.2
Enter the acceleration: 0.5
Enter the time: 5.2
After time t = 5.20 seconds, the velocity v = 12.80 m/s and the displacement x = 59.80 m
Process returned 88 (0x58)   execution time : 15.117 s
Press any key to continue.


"C:\Users\Vinul Gallapththi\Documents\Programming\assignment1\q2.exe"
Enter the initial velocity at time 0: 60
Enter the acceleration: 1.2
Enter the time: 120
After time t = 120.00 seconds, the velocity v = 204.00 m/s and the displacement x = 15840.00 m
Process returned 94 (0x5E)   execution time : 23.445 s
Press any key to continue.



3.

```
//  main.c
//  Question3


#include <stdio.h>


int main(int argc, const char * argv[]) {


   //declaring variables
   double mass, molecularWeight, temperature, volume;
   double gasConstant = 8.314;
   double pressure = 101.325;



   printf("Enter the mass: ");
   scanf("%lf", &mass);//getting the time from user and storing it in the variable mass
```

```
    printf("Enter the Molecular Weight(in moles): ");

    scanf("%lf", &molecularWeight);//getting the time from user and storing it in the variable molecularWeight

    printf("Enter the Temperature(in Celcius): ");

    scanf("%lf", &temperature);//getting the time from user and storing it in the variable temperature


    //converting celcius to Kelvin

    temperature = temperature + 273.15;


    //formula: = v =nrt/p

    volume = ((mass/molecularWeight)*gasConstant*temperature)/pressure;


    printf("When number of moles is %.2f, the gas constant is %fl kPa m^3/(kmole K), the temperature is %fl Kelvin, and the pressure is %fl kPa, then the Volume would be %fl m^3",(mass/molecularWeight), gasConstant, temperature, pressure, volume);


}
```

Trial