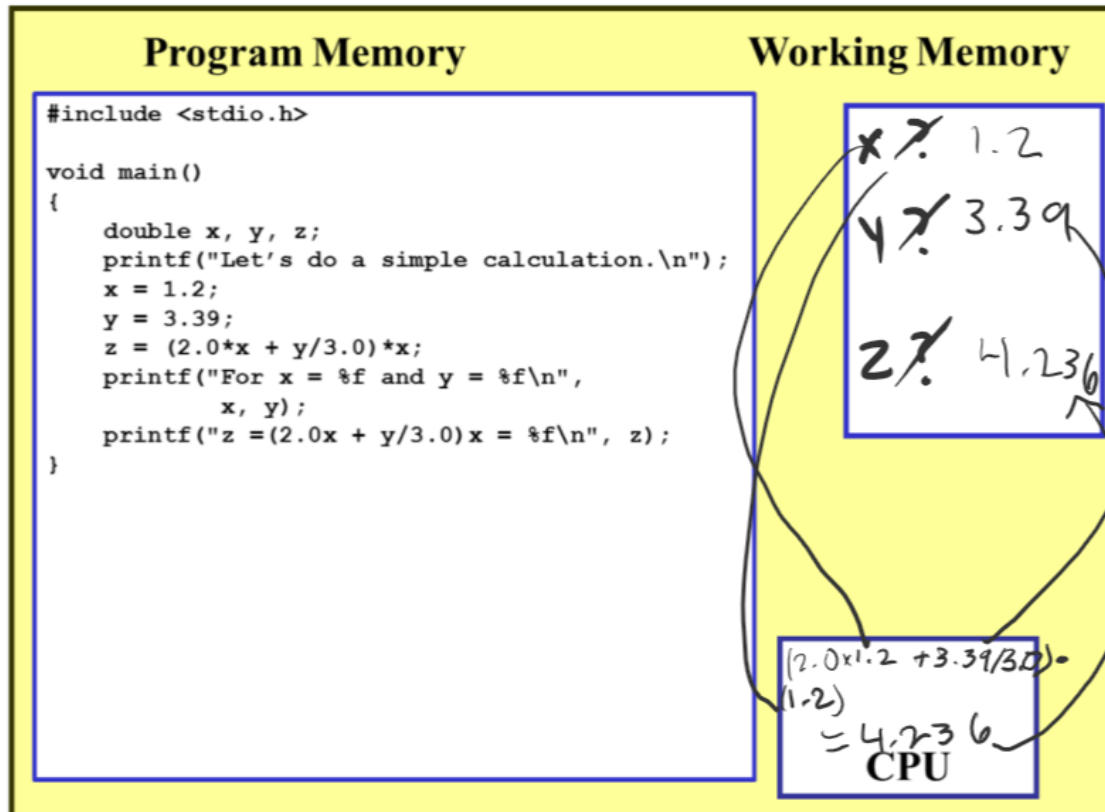
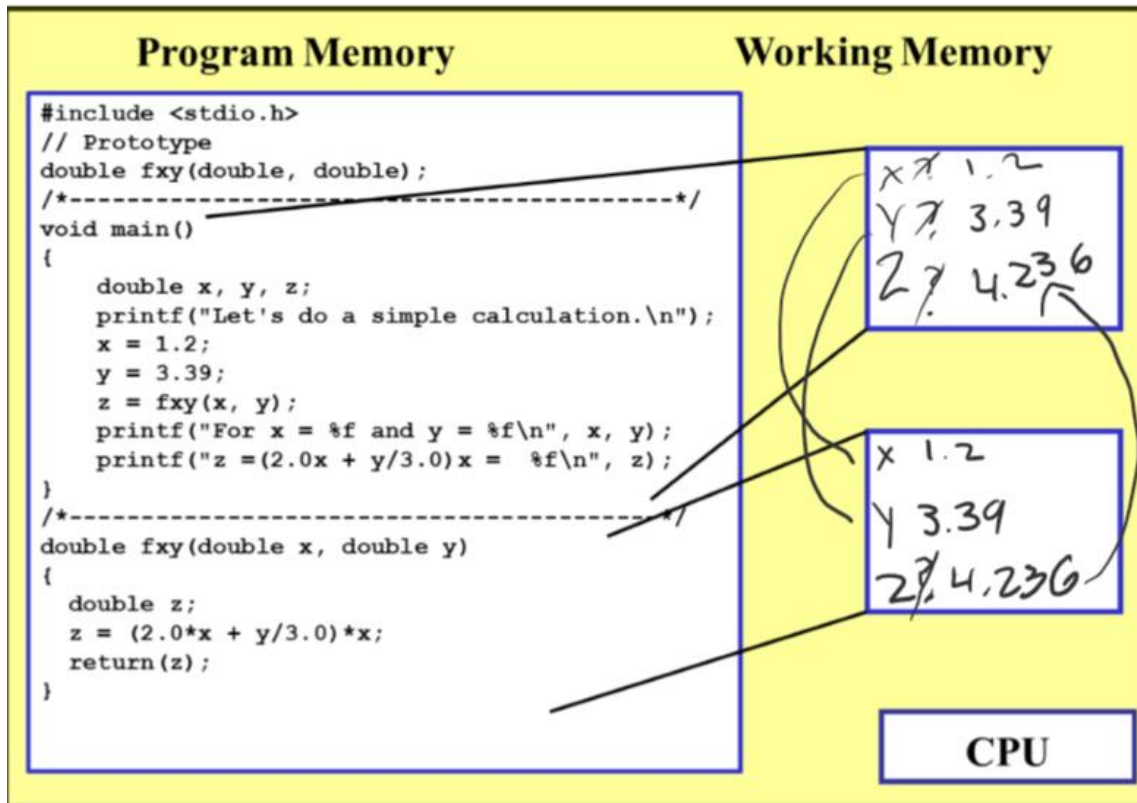


Question 1

a)



1 b)



2.

/*-----*/

File: GNG1106template.c

Author: Aunonto Bhuiya

Description :This program is made to calculate the distance
in meters using the formula for the relationship between time,
initial velocity and acceleration.

-----*/

#include <stdio.h>

// function prototypes

double calculateDistance(double, double, double);

/*-----*/

Function: main

Description: acquire user input, call calculateDistance, print results.

```
-----*/  
  
double main()  
  
{ double t, vO, a, x, v; // Variable declarations  
    printf("Please enter a time(s): "); // Instructions  
    scanf("%lf", &t);  
    printf("\nPlease enter a initial velocity at t=0: ");  
    scanf("%lf", &vO);  
    printf("\nPlease enter a acceleration(m/s^2) : ");  
    scanf("%lf", &a);  
  
    x = calculateDistance(vO,a,t);  
  
    printf("After time %0.2lf (s), the distance traveled is: %0.2lf (m)", t, x);  
    return(0);  
  
}  
/*-----
```

Function: calculateDistance

Parameters:

vO- initial velocity

a- acceleration

t- time

Return: returns the value for distance that was calculated with user input

Description: the function is intended to calculate the distance when given the initial velocity, acceleration and time.

```
-----*/  
  
double calculateDistance(double vO, double a, double t)
```

```

{

// Variable declarations

double x;


// Instructions

x = vO * t + a * pow(t,2)/2;

return(x);

}

```

```

C:\Users\anon\Downloads\GNG1106template.exe
Please enter a time(s): 10

Please enter a initial velocity at t=0: 1

Please enter a acceleration(m/s^2) : 0
After time 10.00 (s), the distance traveled is: 10.00 (m)
Process returned 57 (0x39)   execution time : 16.826 s
Press any key to continue.

```

```

C:\Users\anon\Downloads\GNG1106template.exe
Please enter a time(s): 0.5

Please enter a initial velocity at t=0: 0

Please enter a acceleration(m/s^2) : 250
After time 0.50 (s), the distance traveled is: 31.25 (m)
Process returned 56 (0x38)   execution time : 14.242 s
Press any key to continue.

```

```

C:\Users\anon\Downloads\GNG1106template.exe
Please enter a time(s): 5.2

Please enter a initial velocity at t=0: 10.2

Please enter a acceleration(m/s^2) : 0.5
After time 5.20 (s), the distance traveled is: 59.80 (m)
Process returned 56 (0x38)   execution time : 18.666 s
Press any key to continue.

```

```

C:\Users\anon\Downloads\GNG1106template.exe
Please enter a time(s): 120

Please enter a initial velocity at t=0: 60

Please enter a acceleration(m/s^2) : 1.2
After time 120.00 (s), the distance traveled is: 15840.00 (m)
Process returned 61 (0x3D)   execution time : 12.585 s
Press any key to continue.

```

```

C:\Users\anon\Downloads\GNG1106template.exe
Please enter a time(s): 0

Please enter a initial velocity at t=0: 60

Please enter a acceleration(m/s^2) : 1.2
After time 0.00 (s), the distance traveled is: 0.00 (m)
Process returned 55 (0x37)   execution time : 16.512 s
Press any key to continue.

```

3.

```
/*-----*/
```

File: GasProblem.c

Author: Aunonto Bhuiya

Description: This program was made to calculate the volume of a gas using the formula of the relationship between pressure, temperature and the mass of the gas

```
-----*/
```

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

```
// function prototypes
```

```
double convertVolume(double,double,double);
```

```
/*-----*/
```

Function: main

Description: acquire user input, call convertVolume, print results

```
-----*/
```

```
double main()
```

```
{ double t, v, M, m; // Variable declarations
```

```
    printf("The mass of the gas under 1 atm (kg): "); // Instructions
```

```
    scanf("%lf", &m);
```

```
    printf("\nPlease enter the molecular weight of the gas 1 atm in kg/kmol: ");
```

```
    scanf("%lf", &M);
```

```
    printf("\nPlease enter the temperature of the gas under 1atm in kelvin?: ) : ");
```

```
    scanf("%lf", &t);
```

```
    v = convertVolume(m,M,t);
```

```
    printf("The volume of this gas is: %lf", v);
```

```
    return(0);
```

```
}
```

```
/*-----
```

Function:convertVolume

Parameters:

m-

M-

t-

Return: Returns the value (v) that was calculated from user input

Description: The function is made to calculate the volume

of gas based on the relationship between mass, molecular weight and temperature

under 1 atm

```
-----*/
```

```
double convertVolume(double m, double M, double t)
```

```
{
```

```
// Variable declarations
```

```
double v;
```

```
// Instructions
```

```
v = ((m/M) * (t + 273.15) * 8.314) / 101.325;
```

```
return(v);
```

```
}
```

Gas	Molecular weight (kg/kml)	Temperature (C*)	Mass (kg)	Volume (v^3)
argon	39.948	-54	34	15.304486
Benzene	78.114	145	721	316.688211
Hydrogen	2.016	-230	854	1499.828323
nitrogen	18.0134	-83	23	19.921493
r-114	170.93	65	62	10.064129

```
C:\Users\launon\Desktop\GNG1106\Practice\GasProblem.exe
The mass of the gas under 1 atm (kg): 34
Please enter the molecular weight of the gas 1 atm in kg/kmol: 39.948
Please enter the temperature of the gas under 1atm in Celsius : ) : -54
The volume of this gas is: 15.304486
Process returned 36 (0x24)   execution time : 25.001 s
Press any key to continue.
```

```
C:\Users\anon\Desktop\GNG1106\Practice\GasProblem.exe
The mass of the gas under 1 atm (kg): 721
Please enter the molecular weight of the gas 1 atm in kg/kmol: 78.114
Please enter the temperature of the gas under 1atm in Celsius : ) : 145
The volume of this gas is: 316.688211
Process returned 37 (0x25)   execution time : 16.644 s
Press any key to continue.
```

```
C:\Users\anon\Desktop\GNG1106\Practice\GasProblem.exe
The mass of the gas under 1 atm (kg): 854
Please enter the molecular weight of the gas 1 atm in kg/kmol: 2.016
Please enter the temperature of the gas under 1atm in Celsius : ) : -230
The volume of this gas is: 1499.828323
Process returned 38 (0x26)   execution time : 29.159 s
Press any key to continue.
```

```
C:\Users\anon\Desktop\GNG1106\Practice\GasProblem.exe
The mass of the gas under 1 atm (kg): 23
Please enter the molecular weight of the gas 1 atm in kg/kmol: 18.0134
Please enter the temperature of the gas under 1atm in Celsius : ) : -83
The volume of this gas is: 19.921493
Process returned 36 (0x24)   execution time : 20.291 s
Press any key to continue.
```

```
C:\Users\anon\Desktop\GNG1106\Practice\GasProblem.exe
The mass of the gas under 1 atm (kg): 62
Please enter the molecular weight of the gas 1 atm in kg/kmol: 170.93
Please enter the temperature of the gas under 1atm in Celsius : ) : 65
The volume of this gas is: 10.064129
Process returned 36 (0x24)   execution time : 13.856 s
Press any key to continue.
```