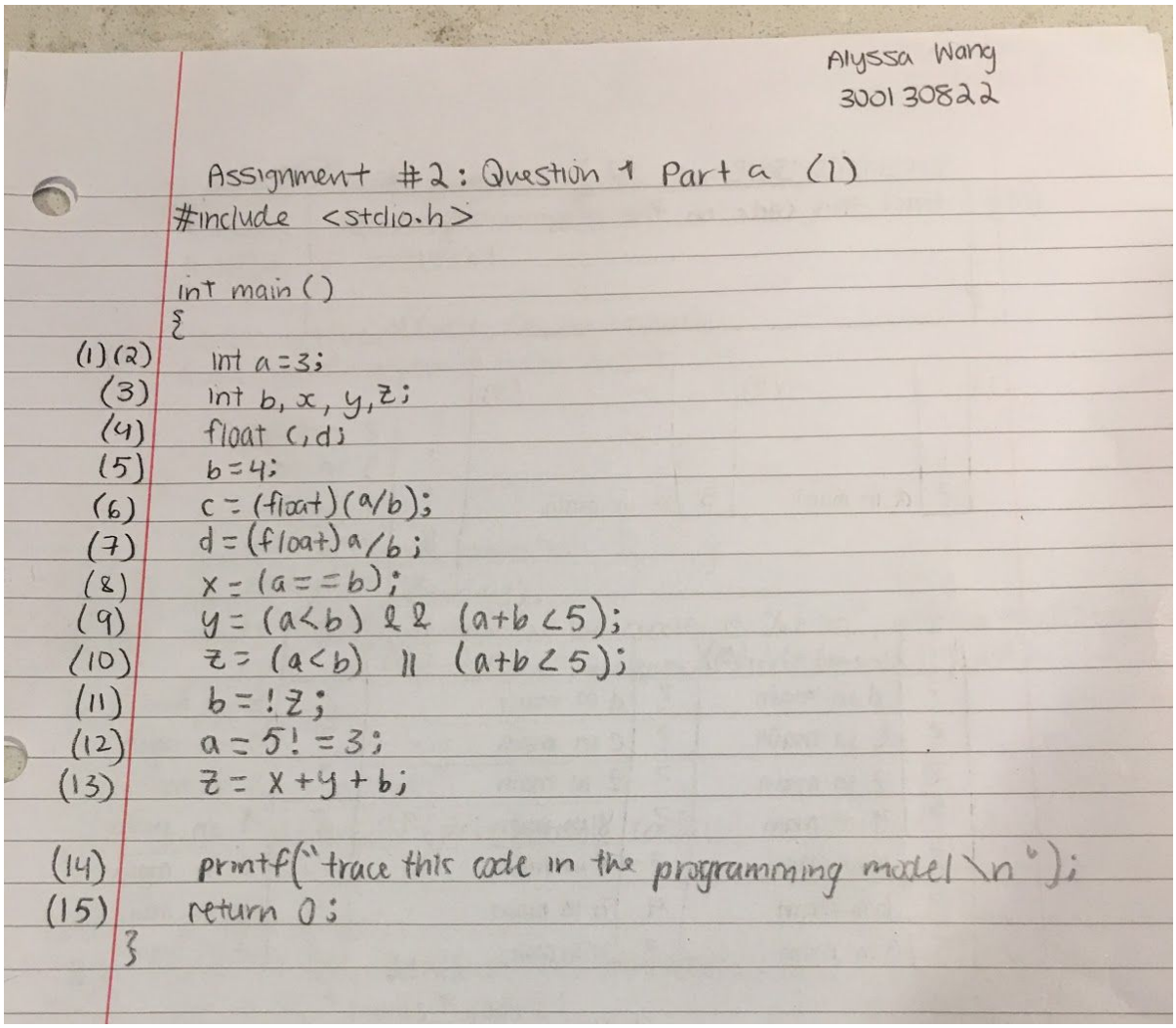
GNG 1106 - Assignment 2

QUESTION 1

a)



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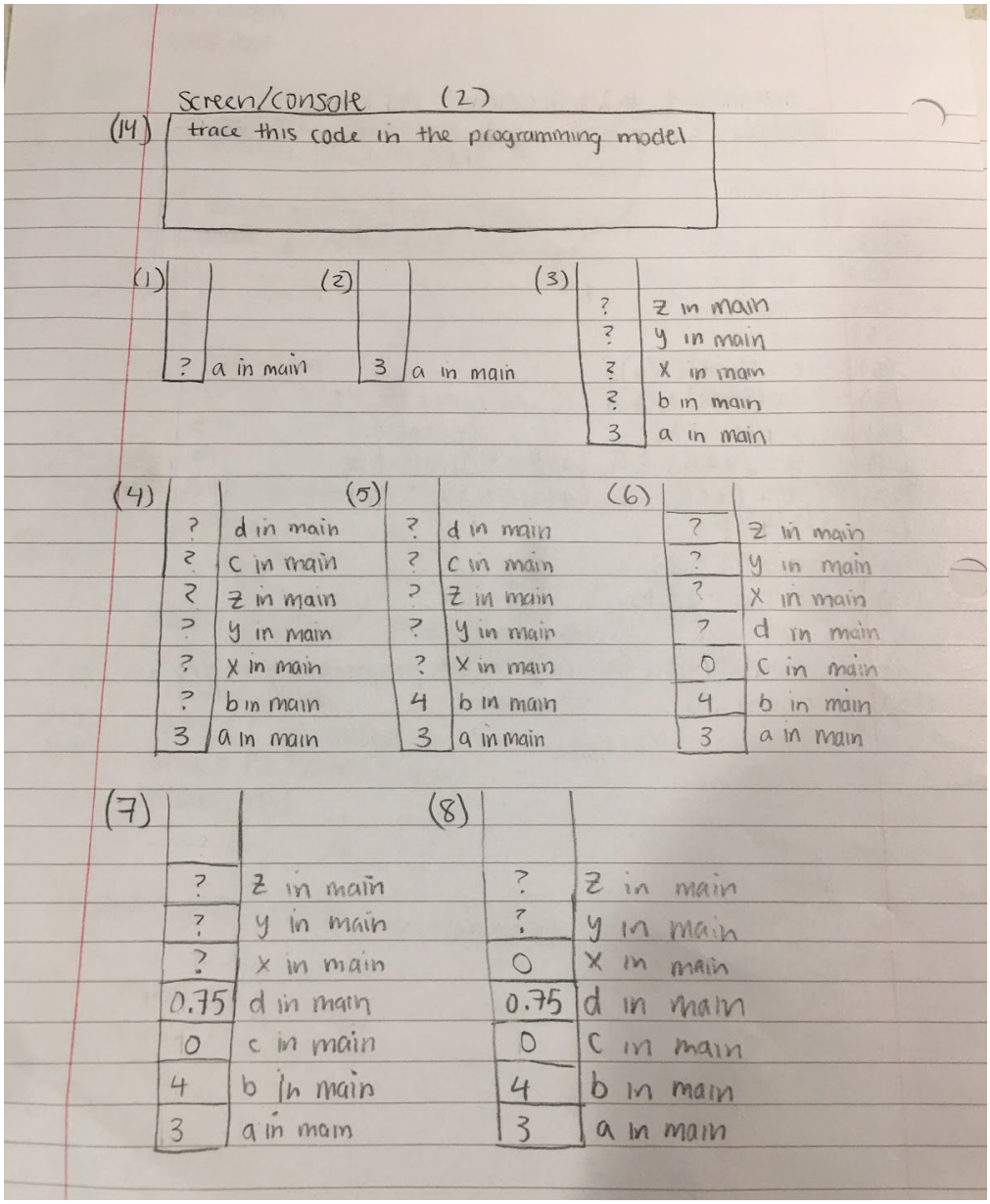
Assignment #2: Question 1 Part a (1)

```
#include <stdio.h>

int main()
{
(1)(2)   int a=3;
(3)      int b, x, y, z;
(4)      float c, d;
(5)      b=4;
(6)      c=(float)(a/b);
(7)      d=(float)a/b;
(8)      x=(a==b);
(9)      y=(a<b) && (a+b<5);
(10)     z=(a<b) || (a+b<5);
(11)     b=!z;
(12)     a=5!=3;
(13)     z=x+y+b;

(14)     printf("trace this code in the programming model\n");
(15)     return 0;
}
```



Screen/console (2)

(14) trace this code in the programming model

(1)

?	a in main

(2)

3	a in main

(3)

?	z in main
?	y in main
?	x in main
?	b in main
3	a in main

(4)

?	d in main
?	c in main
?	z in main
?	y in main
?	x in main
?	b in main
3	a in main

(5)

?	d in main
?	c in main
?	z in main
?	y in main
?	x in main
4	b in main
3	a in main

(6)

?	z in main
?	y in main
?	x in main
?	d in main
0	c in main
4	b in main
3	a in main

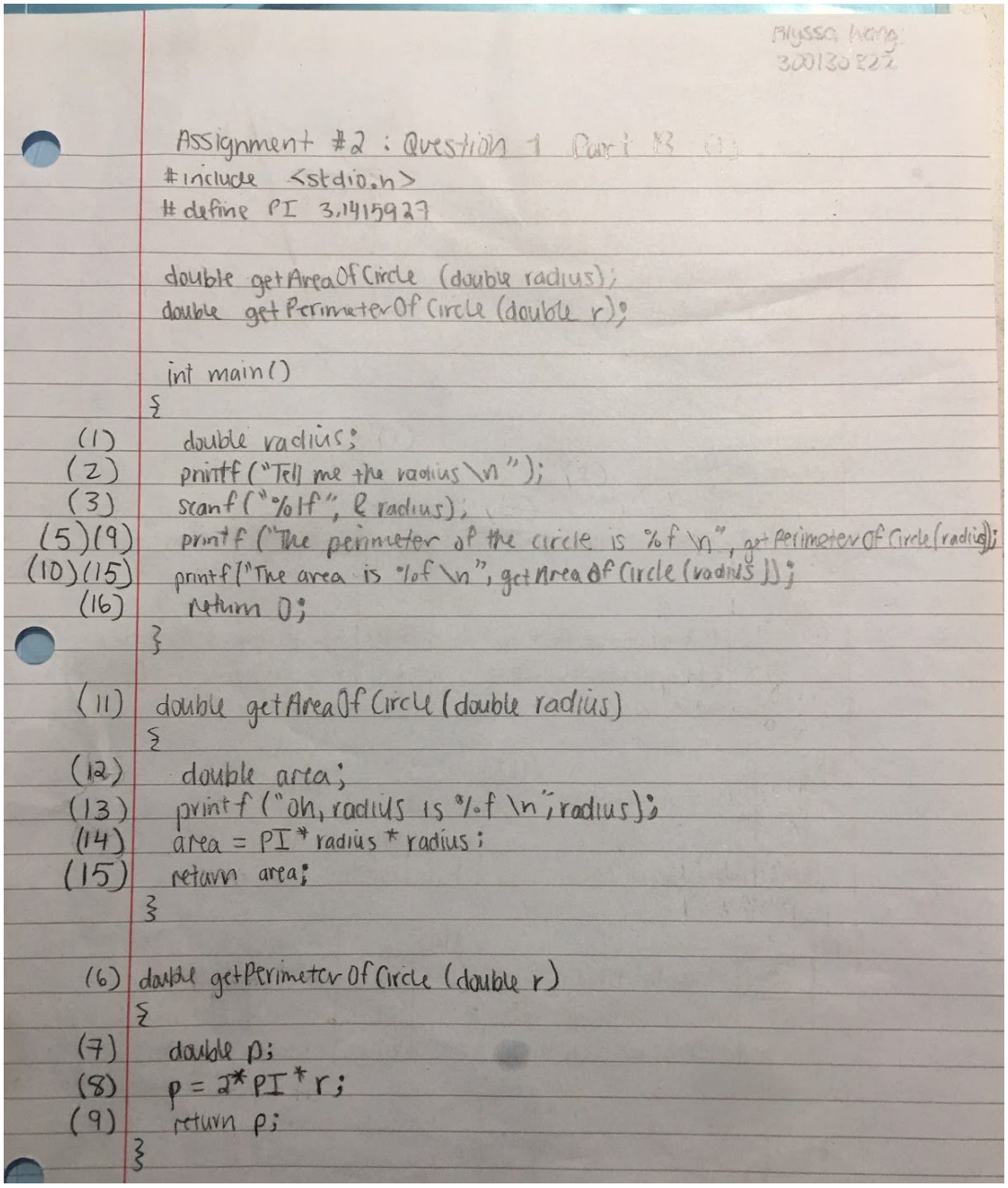
(7)

?	z in main
?	y in main
?	x in main
0.75	d in main
0	c in main
4	b in main
3	a in main

(8)

?	z in main
?	y in main
0	x in main
0.75	d in main
0	c in main
4	b in main
3	a in main

b)



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Assignment #2 : Question 1 Part B (b)

```
#include <stdio.h>
#define PI 3.1415927

double getAreaOfCircle (double radius);
double getPerimeterOfCircle (double r);

int main()
{
(1)   double radius;
(2)   printf("Tell me the radius\n");
(3)   scanf("%lf", &radius);
(5)(9)  printf("The perimeter of the circle is %f\n", getPerimeterOfCircle(radius));
(10)(15) printf("The area is %f\n", getAreaOfCircle(radius));
(16)  return 0;
}

(11) double getAreaOfCircle(double radius)
{
(12)  double area;
(13)  printf("oh, radius is %.f\n", radius);
(14)  area = PI * radius * radius;
(15)  return area;
}

(6) double getPerimeterOfCircle(double r)
{
(7)   double p;
(8)   p = 2 * PI * r;
(9)   return p;
}
```

(2)

Screen/console

(2)	Tell me the radius
(4)	4.2
(9)	The perimeter of the circle is
(13)	Oh, radius is
(15)	The area is

(1)

?	radius in main

(4)

4.2	radius in main

(6)

4.2	r in getPerimeterOfCircle
4.2	radius in main

(7)

?	P in getPerimeterOfCircle
4.2	r in getPerimeterOfCircle
4.2	radius in main

(8)

26.4	P in getPerimeterOfCircle
4.2	r in getPerimeterOfCircle
4.2	radius in main

(9)

4.2	radius in main

(11)

4.2	radius in getAreaOfCircle
4.2	radius in main

(13)

?	area in getAreaOfCircle
4.2	radius in getAreaOfCircle
4.2	radius in main

(14)

55.4	area in getAreaOfCircle
4.2	radius in getAreaOfCircle
4.2	radius in main

(15)

4.2	radius in main

(16)

(3)

(9)

?	z in main
0	y in main
0	x in main
0.75	d in main
1	c in main
4	b in main
3	a in main

(10)

1	z in main
0	y in main
0	x in main
0.75	d in main
1	c in main
4	b in main
3	a in main

(11)

1	b in main
1	z in main
0	y in main
0	x in main
0.75	d in main
1	c in main
3	a in main

(12)

1	a in main
1	b in main
1	z in main
0	y in main
0	x in main
0.75	d in main
1	c in main

(13)

1	z in main
1	a in main
1	b in main
0	y in main
0	x in main
0.75	d in main
1	c in main

(15)

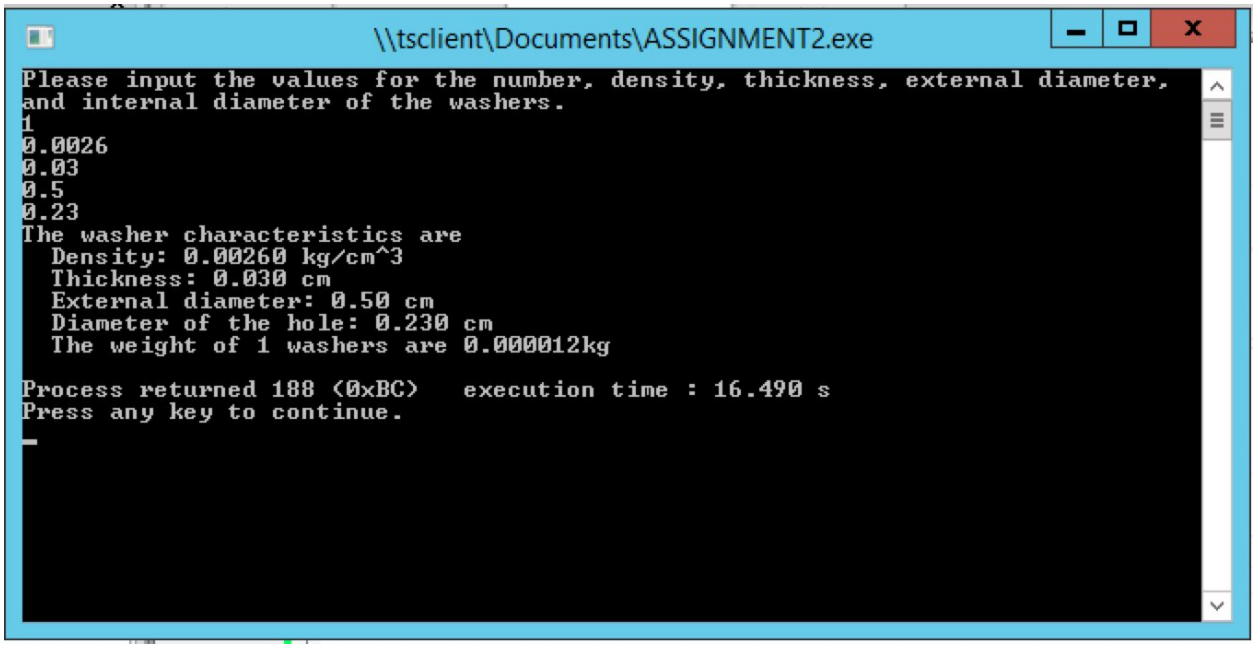
QUESTION 2

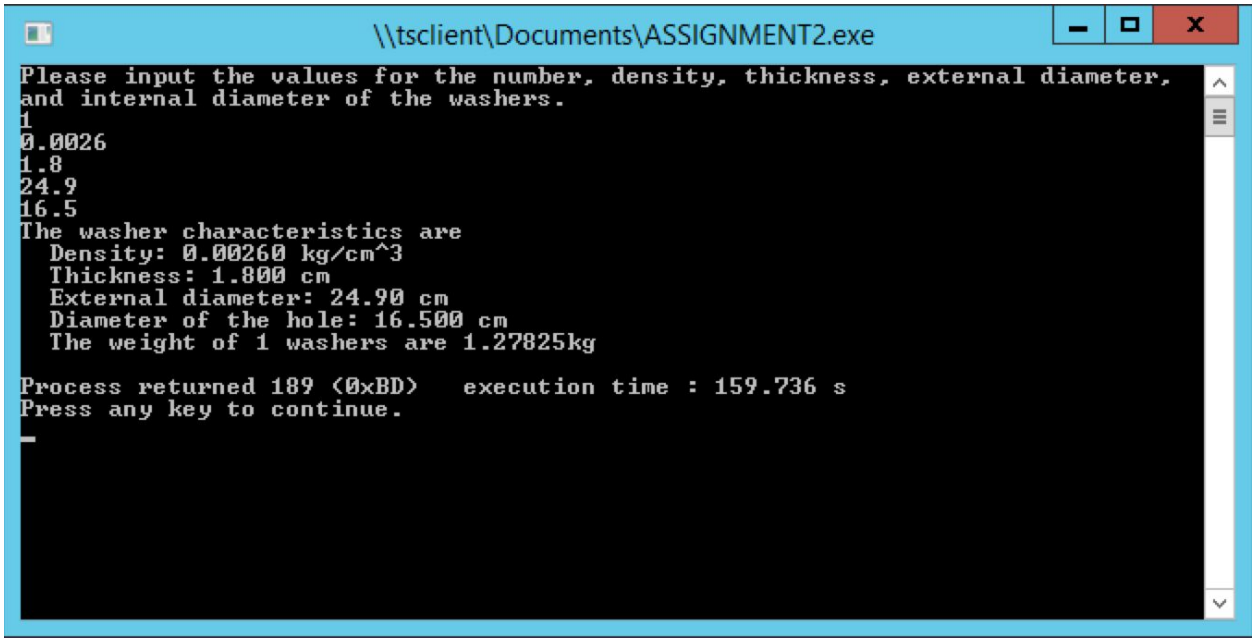
```
#include <stdio.h>
#include <math.h> //Header file used to complete basic mathematic operations

double calculateWeight(double N, double x, double d, double Wn, double d1,
double d2)
/* Double function called calculateWeight and the parameters declares and
identifies the variables */
{
    Wn = pow(d2, 2) - pow(d1, 2); //Receives the values inputted in the main
and then computes them in the formula and stores that answer in Wn
    Wn = N * x * d * M_PI * Wn; //Receives the values inputted in main and the
calculated Wn to compute them in another formula and then stores the new value
into Wn
    Wn = Wn/4; // Receives the value of Wn and then uses it to calculate the
new value of Wn
    return (Wn); // Used to return the calculated value of Wn into the main
function
}

double main (double N, double x, double d, double Wn, double d1, double d2)
/* Double main function and the parameters declares and identifies the inputted
variables: N, x, d, Wn, d1, d2 */
{
    printf("Please input the values for the number, density, thickness,
external diameter, and internal diameter of the washers.\n", N, d, x, d2, d1);
/* Prompts the user for the number, density, thickness, external diameter, and
internal diameter of the washers */
    scanf("%lf%lf%lf%lf%lf", &N, &d, &x, &d2, &d1); // Reads the user's input
and stores them into their allocated variable
    Wn = calculateWeight(N, x, d, Wn, d1, d2); // Calls the function
calculateWeight and receives the value of Wn
    printf("The washer characteristics are \n  Density: %.5lf kg/cm^3 \n
Thickness: %.3lf cm \n  External diameter: %.2lf cm \n  Diameter of the hole:
%.3lf cm \n  The weight of %.0lf washers are %lfkg\n", d, x, d2, d1, N, Wn);
/* Inputs the collected values and then prints the final statement. */
    return 0; // Terminates the function
}
```

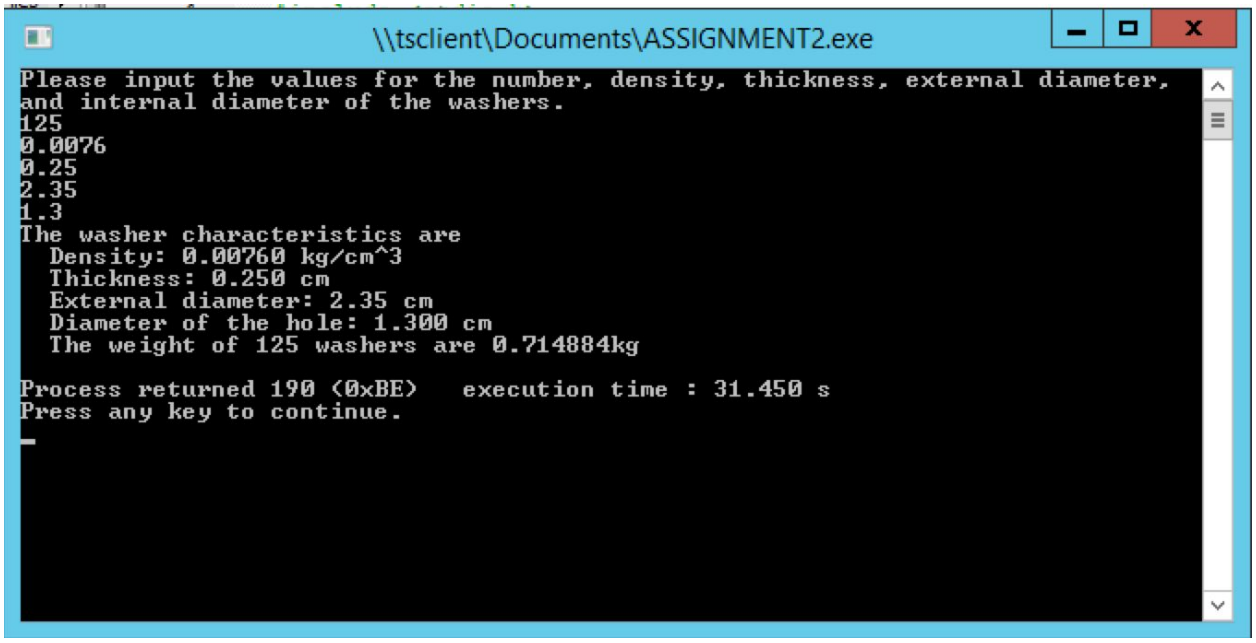
Alyssa Wang

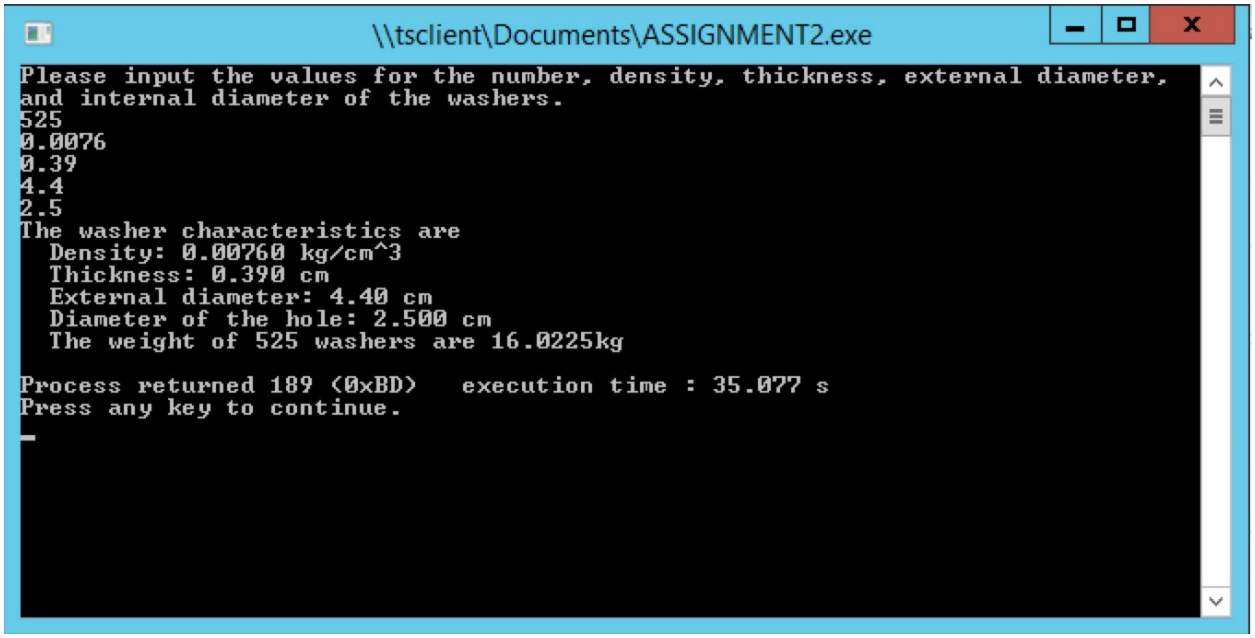
Start here | Lecture7.c | ASSIGNMENT2.c | *Lab3.c

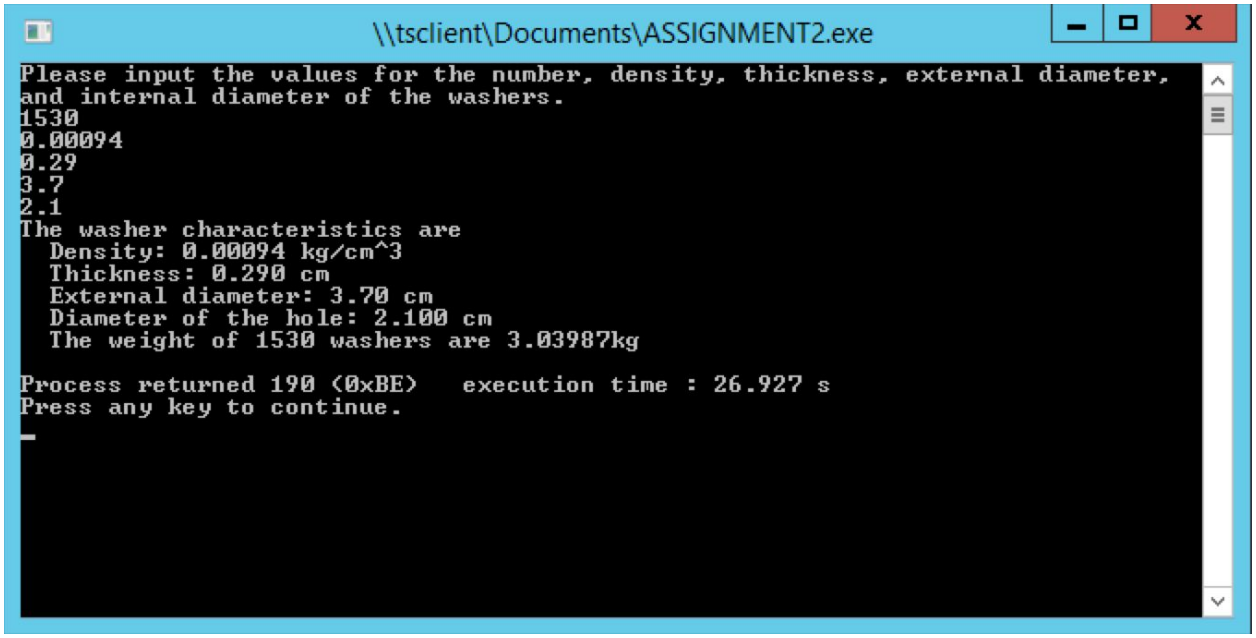
```c
#include <stdio.h>
#include <math.h> //Header file used to complete basic mathematic operations

double calculateWeight(double N, double x, double d, double Wn, double d1, double d2)
/* Double function called calculateWeight and the parameters declares and identifies the variables */
{
    Wn = pow(d2, 2) - pow(d1, 2); //Receives the values inputted in the main and then computes them in the formula and stores that answer in Wn
    Wn = N * x * d * M_PI * Wn; //Receives the values inputted in main and the calculated Wn to compute them in another formula and then stores the new value into Wn
    Wn = Wn/4; // Receives the value of Wn and then uses it to calculate the new value of Wn
    return (Wn); // Used to return the calculated value of Wn into the main function
}

double main (double N, double x, double d, double Wn, double d1, double d2)
/* Double main function and the parameters declares and identifies the inputted variables: N, x, d, Wn, d1, d2 */
{
    printf("Please input the values for the number, density, thickness, external diameter, and internal diameter of the washers.\n", N, d, x, d2, d1);
/* Prompts the user for the number, density, thickness, external diameter, and internal diameter of the washers */
    scanf("%lf%lf%lf%lf%lf", &N, &d, &x, &d2, &d1); // Reads the user's input and stores them into their allocated variable
    Wn = calculateWeight(N, x, d, Wn, d1, d2); // Calls the function calculateWeight and receives the value of Wn
    printf("The washer characteristics are \n  Density: %.5lf kg/cm^3 \n  Thickness: %.3lf cm \n  External diameter: %.2lf cm \n  Diameter of the hole: %.3lf cm \n  The weight of %.0lf washers are %lfkg\n", d, x, d2, d1, N, Wn);
/* Inputs the collected values and then prints the final statement. */
    return 0; // Terminates the function
}
```

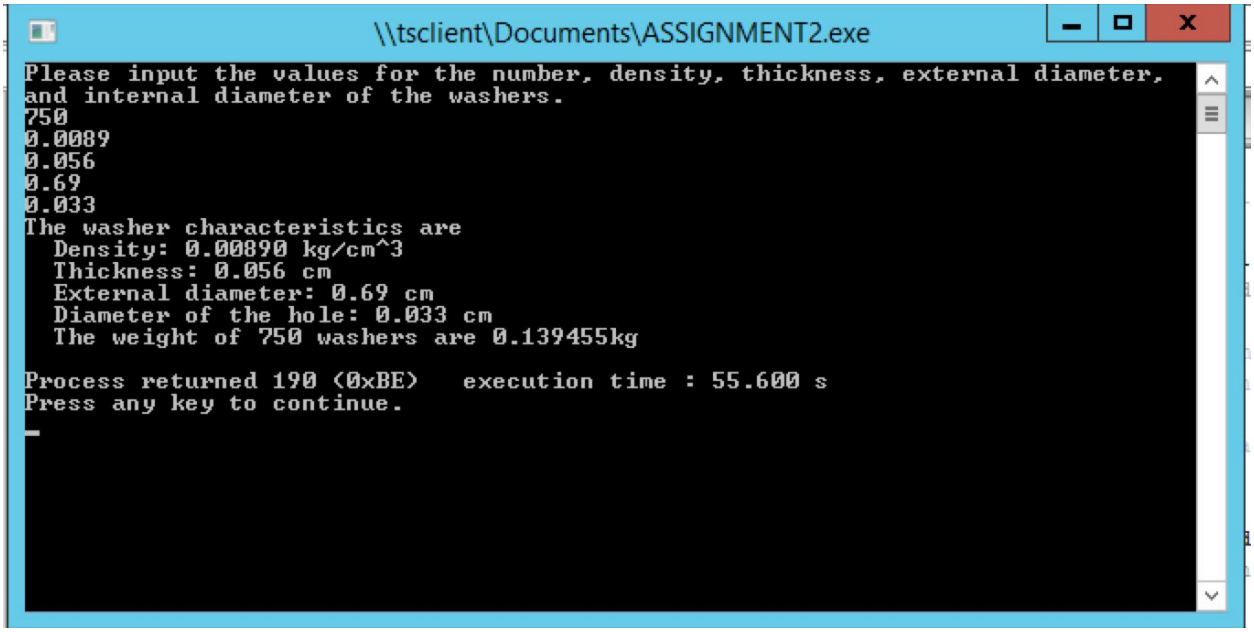



\\tsclient\Documents\ASSIGNMENT2.exe
Please input the values for the number, density, thickness, external diameter,
and internal diameter of the washers.
1
0.0026
1.8
24.9
16.5
The washer characteristics are
Density: 0.00260 kg/cm^3
Thickness: 1.800 cm
External diameter: 24.90 cm
Diameter of the hole: 16.500 cm
The weight of 1 washers are 1.27825kg
Process returned 189 (0xBD) execution time : 159.736 s
Press any key to continue.


\\tsclient\Documents\ASSIGNMENT2.exe
Please input the values for the number, density, thickness, external diameter,
and internal diameter of the washers.
125
0.0076
0.25
2.35
1.3
The washer characteristics are
Density: 0.00760 kg/cm^3
Thickness: 0.250 cm
External diameter: 2.35 cm
Diameter of the hole: 1.300 cm
The weight of 125 washers are 0.714884kg
Process returned 190 (0xBE) execution time : 31.450 s
Press any key to continue.


\\tsclient\Documents\ASSIGNMENT2.exe
Please input the values for the number, density, thickness, external diameter,
and internal diameter of the washers.
525
0.0076
0.39
4.4
2.5
The washer characteristics are
Density: 0.00760 kg/cm^3
Thickness: 0.390 cm
External diameter: 4.40 cm
Diameter of the hole: 2.500 cm
The weight of 525 washers are 16.0225kg
Process returned 189 (0xBD) execution time : 35.077 s
Press any key to continue.


\\tsclient\Documents\ASSIGNMENT2.exe
Please input the values for the number, density, thickness, external diameter,
and internal diameter of the washers.
1530
0.00094
0.29
3.7
2.1
The washer characteristics are
Density: 0.00094 kg/cm^3
Thickness: 0.290 cm
External diameter: 3.70 cm
Diameter of the hole: 2.100 cm
The weight of 1530 washers are 3.03987kg
Process returned 190 (0xBE) execution time : 26.927 s
Press any key to continue.


\\tsclient\Documents\ASSIGNMENT2.exe
Please input the values for the number, density, thickness, external diameter,
and internal diameter of the washers.
750
0.0089
0.056
0.69
0.033
The washer characteristics are
Density: 0.00890 kg/cm^3
Thickness: 0.056 cm
External diameter: 0.69 cm
Diameter of the hole: 0.033 cm
The weight of 750 washers are 0.139455kg
Process returned 190 (0xBE) execution time : 55.600 s
Press any key to continue.