

1.

The output of the program would be 8.5000000000 due to the “return 0” statement on line 6 terminating the program returning the code “0” thereby making it so the following lines are not run.

2.

a. 39Magic is not a valid identifier.

b. Variable1 is a valid identifier.

c. Variable_2 is a valid identifier.

d. temp-f is not a valid identifier.

e. a05hn31x is a valid identifier.

f. melody# is not a valid identifier.

g. long is not a valid identifier.

h. A is a valid identifier.

i. counter_to_10 is a valid identifier.

3.

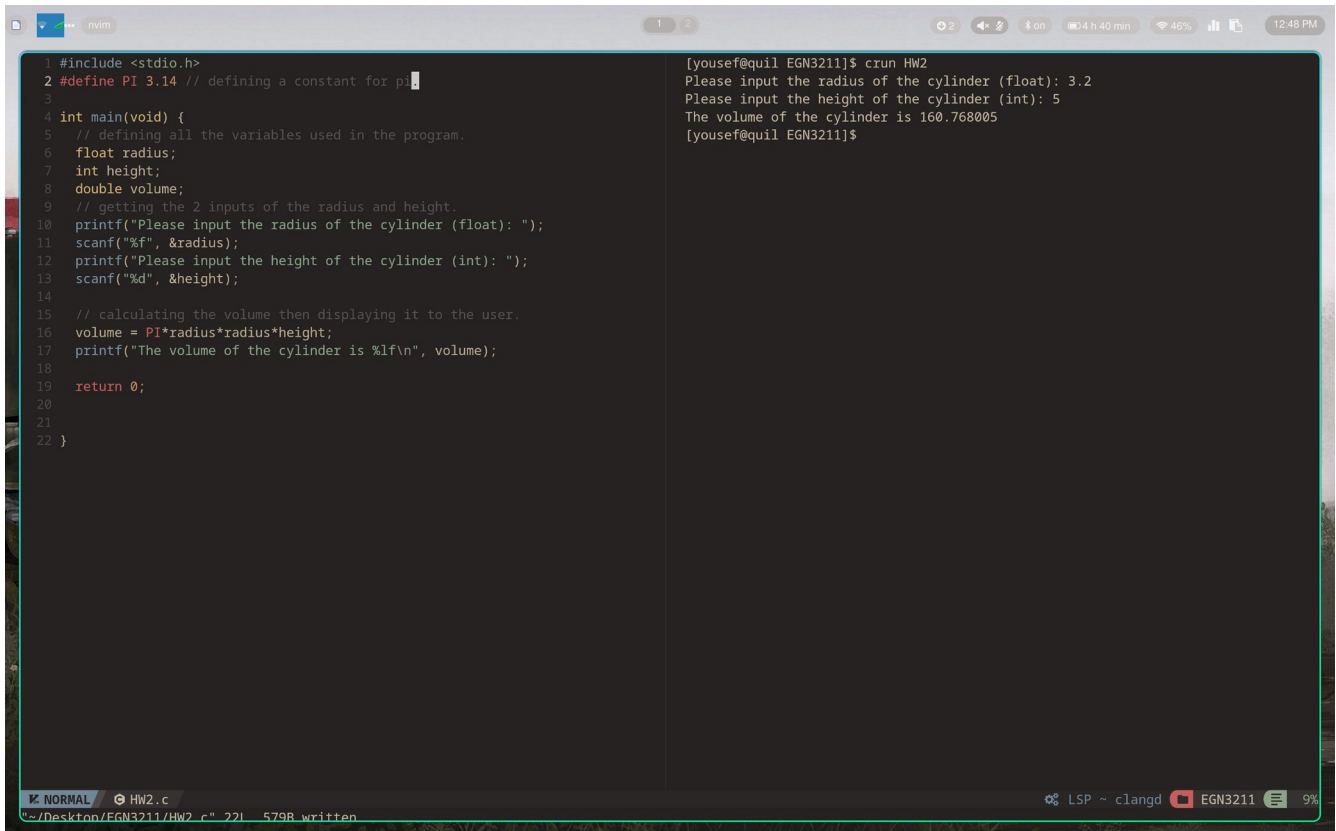
a. $5+6*(1+2)\%4 = 5+6*3\%4 = 5+18\%4 = 5+2 = 7$.

b. $2-3*5+7 = 2-15+7 = -13+7 = -6$.

c. $(8+2*3)\%2 = (8+6)\%2 = 14\%2 = 0$.

d. $8/3+2*4 = 2+2*4 = 2+8 = 10$.

4.

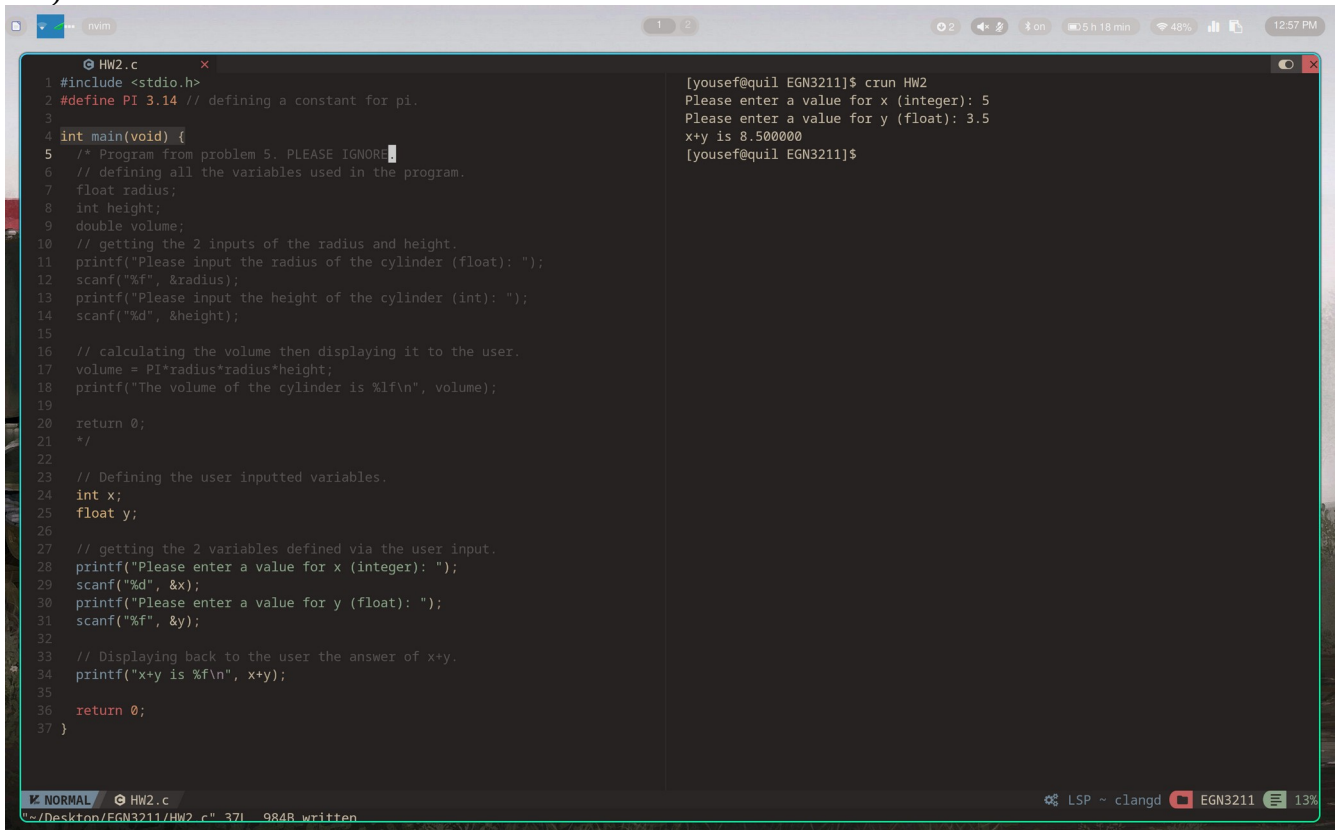


The screenshot shows a terminal window with a C program being executed. The program prompts the user for the radius and height of a cylinder and calculates its volume. The output shows the volume as 160.768005.

```
1 #include <stdio.h>
2 #define PI 3.14 // defining a constant for pi
3
4 int main(void) {
5     // defining all the variables used in the program.
6     float radius;
7     int height;
8     double volume;
9     // getting the 2 inputs of the radius and height.
10    printf("Please input the radius of the cylinder (float): ");
11    scanf("%f", &radius);
12    printf("Please input the height of the cylinder (int): ");
13    scanf("%d", &height);
14
15    // calculating the volume then displaying it to the user.
16    volume = PI*radius*radius*height;
17    printf("The volume of the cylinder is %lf\n", volume);
18
19    return 0;
20 }
21
22 }
```

```
[yousef@quail EGN3211]$ crun HW2
Please input the radius of the cylinder (float): 3.2
Please input the height of the cylinder (int): 5
The volume of the cylinder is 160.768005
[yousef@quail EGN3211]$
```

5. a)

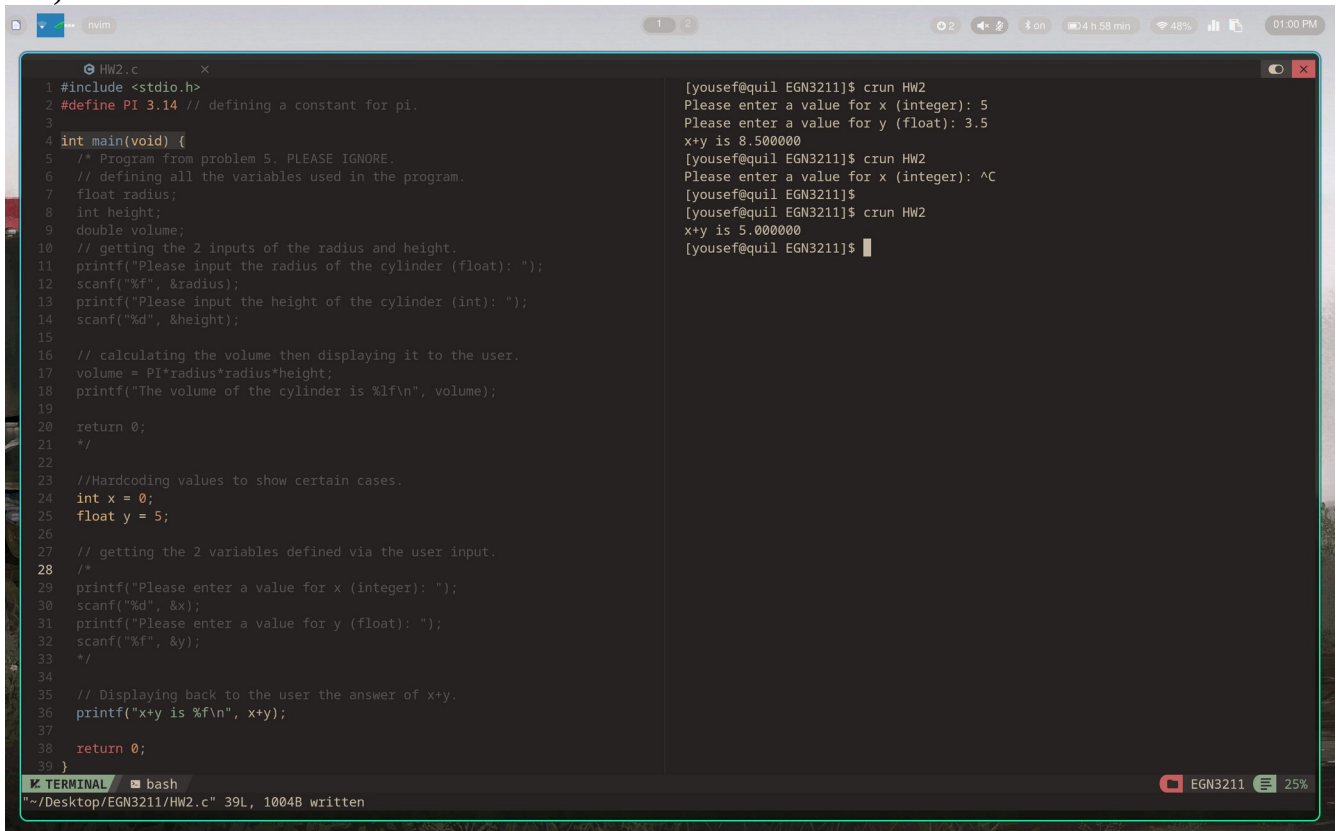


The screenshot shows a terminal window with a C program being executed. The program prompts the user for an integer x and a float y, and calculates their sum. The output shows the sum as 8.500000.

```
1 #include <stdio.h>
2 #define PI 3.14 // defining a constant for pi.
3
4 int main(void) {
5     /* Program from problem 5. PLEASE IGNORE */
6     // defining all the variables used in the program.
7     float radius;
8     int height;
9     double volume;
10    // getting the 2 inputs of the radius and height.
11    printf("Please input the radius of the cylinder (float): ");
12    scanf("%f", &radius);
13    printf("Please input the height of the cylinder (int): ");
14    scanf("%d", &height);
15
16    // calculating the volume then displaying it to the user.
17    volume = PI*radius*radius*height;
18    printf("The volume of the cylinder is %lf\n", volume);
19
20    return 0;
21 }
22
23 // Defining the user inputted variables.
24 int x;
25 float y;
26
27 // getting the 2 variables defined via the user input.
28 printf("Please enter a value for x (integer): ");
29 scanf("%d", &x);
30 printf("Please enter a value for y (float): ");
31 scanf("%f", &y);
32
33 // Displaying back to the user the answer of x+y.
34 printf("x+y is %f\n", x+y);
35
36 return 0;
37 }
```

```
[yousef@quail EGN3211]$ crun HW2
Please enter a value for x (integer): 5
Please enter a value for y (float): 3.5
x+y is 8.500000
[yousef@quail EGN3211]$
```

5. b)

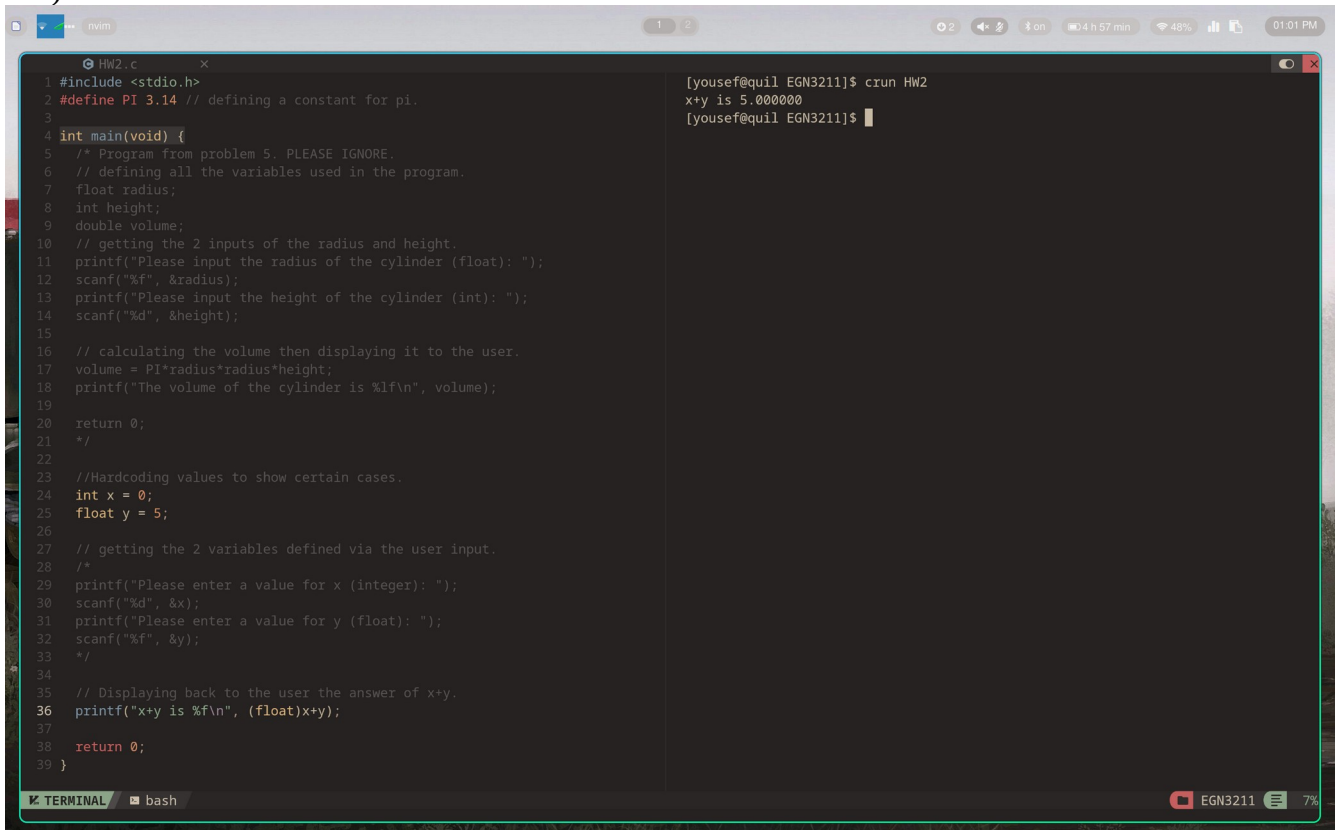


```
#include <stdio.h>
#define PI 3.14 // defining a constant for pi.
int main(void) {
    /* Program from problem 5. PLEASE IGNORE.
    // defining all the variables used in the program.
    float radius;
    int height;
    double volume;
    // getting the 2 inputs of the radius and height.
    printf("Please input the radius of the cylinder (float): ");
    scanf("%f", &radius);
    printf("Please input the height of the cylinder (int): ");
    scanf("%d", &height);
    // calculating the volume then displaying it to the user.
    volume = PI*radius*radius*height;
    printf("The volume of the cylinder is %lf\n", volume);
    return 0;
    */
    //Hardcoding values to show certain cases.
    int x = 0;
    float y = 5;
    // getting the 2 variables defined via the user input.
    /*
    printf("Please enter a value for x (integer): ");
    scanf("%d", &x);
    printf("Please enter a value for y (float): ");
    scanf("%f", &y);
    */
    // Displaying back to the user the answer of x+y.
    printf("x+y is %f\n", x+y);
    return 0;
}
```

[yousef@quil EGN3211]\$ crun HW2
Please enter a value for x (integer): 5
Please enter a value for y (float): 3.5
x+y is 8.500000
[yousef@quil EGN3211]\$ crun HW2
Please enter a value for x (integer): ^C
[yousef@quil EGN3211]\$ crun HW2
x+y is 5.000000
[yousef@quil EGN3211]\$

TERMINAL bash
~/Desktop/EGN3211/HW2.c" 39L, 1004B written

5. c)

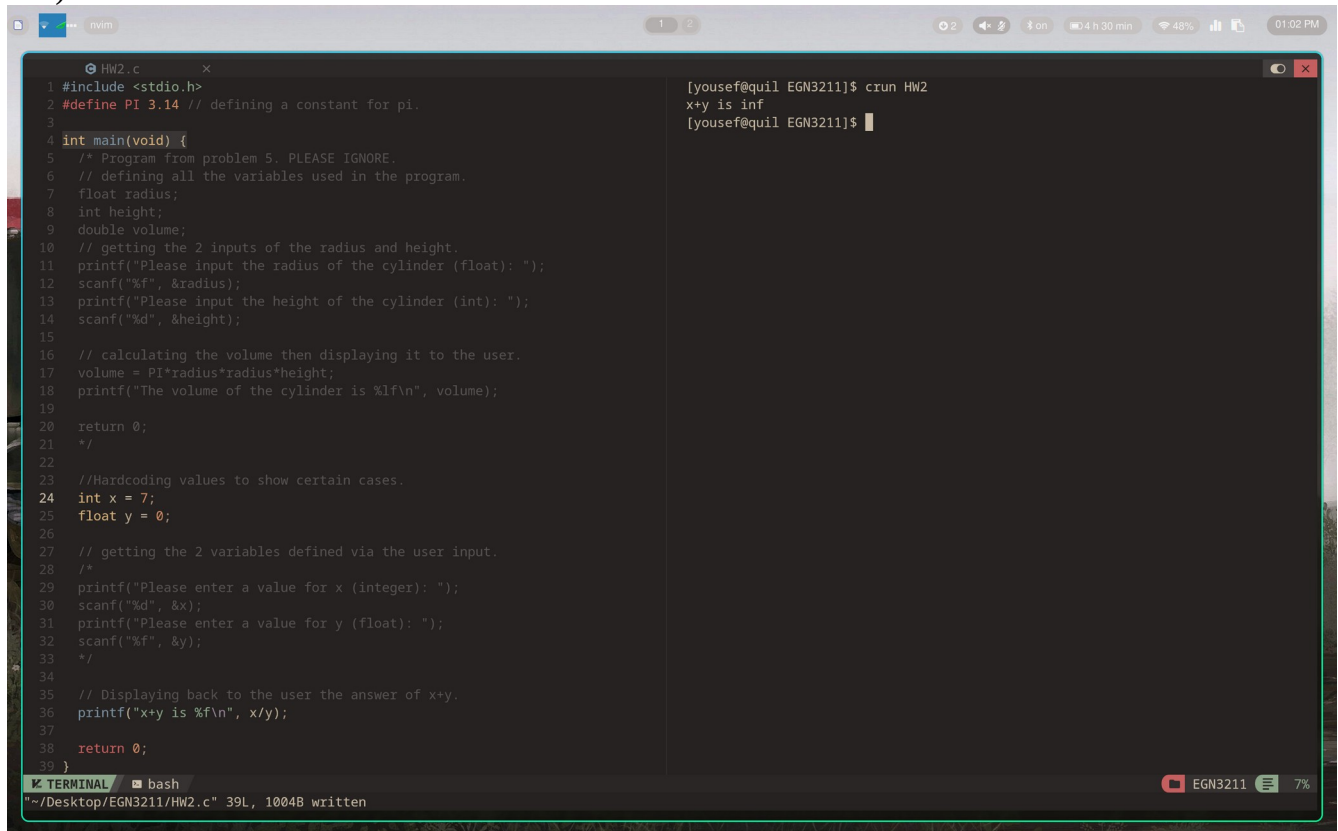


```
#include <stdio.h>
#define PI 3.14 // defining a constant for pi.
int main(void) {
    /* Program from problem 5. PLEASE IGNORE.
    // defining all the variables used in the program.
    float radius;
    int height;
    double volume;
    // getting the 2 inputs of the radius and height.
    printf("Please input the radius of the cylinder (float): ");
    scanf("%f", &radius);
    printf("Please input the height of the cylinder (int): ");
    scanf("%d", &height);
    // calculating the volume then displaying it to the user.
    volume = PI*radius*radius*height;
    printf("The volume of the cylinder is %lf\n", volume);
    return 0;
    */
    //Hardcoding values to show certain cases.
    int x = 0;
    float y = 5;
    // getting the 2 variables defined via the user input.
    /*
    printf("Please enter a value for x (integer): ");
    scanf("%d", &x);
    printf("Please enter a value for y (float): ");
    scanf("%f", &y);
    */
    // Displaying back to the user the answer of x+y.
    printf("x+y is %f\n", (float)x+y);
    return 0;
}
```

[yousef@quil EGN3211]\$ crun HW2
x+y is 5.000000
[yousef@quil EGN3211]\$

TERMINAL bash
EGN3211 7%

5. d)



The screenshot shows a code editor with a C program named `HW2.c` and a terminal window. The C program calculates the volume of a cylinder and then calculates x/y for $x=7$ and $y=0$. The terminal output shows the program running and displaying `x+y is inf`.

```
1 #include <stdio.h>
2 #define PI 3.14 // defining a constant for pi.
3
4 int main(void) {
5     /* Program from problem 5. PLEASE IGNORE.
6     // defining all the variables used in the program.
7     float radius;
8     int height;
9     double volume;
10    // getting the 2 inputs of the radius and height.
11    printf("Please input the radius of the cylinder (float): ");
12    scanf("%f", &radius);
13    printf("Please input the height of the cylinder (int): ");
14    scanf("%d", &height);
15
16    // calculating the volume then displaying it to the user.
17    volume = PI*radius*radius*height;
18    printf("The volume of the cylinder is %lf\n", volume);
19
20    return 0;
21    */
22
23    //Hardcoding values to show certain cases.
24    int x = 7;
25    float y = 0;
26
27    // getting the 2 variables defined via the user input.
28    /*
29    printf("Please enter a value for x (integer): ");
30    scanf("%d", &x);
31    printf("Please enter a value for y (float): ");
32    scanf("%f", &y);
33    */
34
35    // Displaying back to the user the answer of x+y.
36    printf("x+y is %f\n", x/y);
37
38    return 0;
39 }
```

```
[yousef@quil EGN3211]$ crun HW2
x+y is inf
[yousef@quil EGN3211]$
```

TERMINAL bash
~/Desktop/EGN3211/HW2.c" 39L, 1004B written

The reasoning on why it declared infinity is due to the fact that it effectively took the limit of the function (treating x/y as a function and found its limit to infinity).