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1. A. The function name is a poor choice because it is a long name containing multiple words so it is easy to accidentally mistype it. Another reason it is a poor choice is because it references too much in the name, it references the "InputCostsProcess" and it is unclear how much of the process it is used in and it references "OutputResult" which means it stores the result of the calculation as well. This is poor naming because the name is unclear as it contains a lot of words, in addition it is easy to accidentally mistype. (1)

B. List of problems

- User inputs (Number of products, selling price)
 - Calculate profit *how?*
 - Output profit
 - What username and password do I choose? *Should this not come first?*
 - User inputs (Username, password)
 - Entry to program after correct username and password entry
 - Fail to enter after password is incorrect
 - Fail to enter after username is incorrect
 - Report to security administrator are 3 failed attempts
- (2)

C. Testing

1. Check cost input is successful *meaning?*
 2. Check selling price input is successful *meaning?*
 3. Check profit output is correct with the inputs taken *How?*
 4. Test login on a correct username and incorrect password
 5. Test login on an incorrect username and correct password
 6. Test login on both incorrect username and password ✓
 7. Test login on correct input of password and username
 8. Test erroneous values on cost input
 9. Test erroneous values on selling input ✓
 10. Test erroneous values on username input ✓
 11. Test erroneous values on password input ✓
- (4)

2. A. Steps needed to complete this program

- Take user inputs for name height and weight
- Make sure these inputs are validation so the program does not crash when "a" is typed as height for example
- Calculate the BMI correctly, using the formula (weight/height²)
- Make if statement for each possible description *Detail needed*
- Make sure the comparisons for the each if statement are correct. ?
- After 1 successful output from an if, program should end and not continue

Logic - pseudocode

string name

double height double weight

write "enter name"

name = readline

write "enter height"

height = readline

write "enter weight"

weight = readline

bmi = weight/height^2

if bmi < 18.5

write "you are underweight"

if bmi > 18.5 & < 25

write "you are normal"

if bmi > 25 & < 30

write "you are overweight"

if bmi > 30

write "you are obese"

~~Validation?~~

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B. Code implementation

```
class Program
{
    static void Main(string[] args)
    {
        // SEAN GARRINGTON ACAD EMPL TASK 2 BMI

        double height = 0;
        double weight = 0;

        // Gathering user inputs

        Console.WriteLine("Hello, please enter your name");
        string name = Console.ReadLine();

        Console.WriteLine("Please enter your height in m");
        double.TryParse(Console.ReadLine(), out height);
        Console.WriteLine("Please enter your weight in kg");
        double.TryParse(Console.ReadLine(), out weight);

        // BMI Calculation

        double bmi = weight / (height * 2);
        // Console.WriteLine(bmi);

        // BMI Value to Description

        bool output = false;

        while (output == false)
        {
            if (bmi < 18.5)
            {
                Console.WriteLine("According to your BMI, you are underweight");
                output = true;
            }
            if (bmi > 18.5 && bmi < 25)
            {
                Console.WriteLine("According to your BMI, you are normal");
                output = true;
            }
            if (bmi > 25 && bmi < 30)
            {
                Console.WriteLine("According to your BMI, you are overweight");
                output = true;
            }
            if (bmi > 30)
            {
                Console.WriteLine("According to your BMI, you are obese");
                output = true;
            }
        }
    }
}
```

bool ok =

Test the boolean for validity

As above

// BMI Calculation

double bmi = weight / (height * 2);

// Console.WriteLine(bmi);

// BMI Value to Description

bool output = false;

while (output == false)

{

if (bmi < 18.5)

{

Console.WriteLine("According to your BMI, you are underweight");
output = true;

}

if (bmi > 18.5 && bmi < 25)

{

Console.WriteLine("According to your BMI, you are normal");
output = true;

}

if (bmi > 25 && bmi < 30)

{

Console.WriteLine("According to your BMI, you are overweight");
output = true;

}

if (bmi > 30)

{

Console.WriteLine("According to your BMI, you are obese");
output = true;

}

}

}

}

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wrong syntax — squared
not multiply

why loop?

BMI of 25
causes
infinite
loop.

3. List of problems

- Generating the menu
- User inputs for the menu
- Selecting the corresponding action for the menu (area of circle, rectangle or exit)
- Requesting inputs for area of rectangle
- Gathering inputs for area of rectangle
- Calculating area of rectangle using $w * h$
- Outputting area of rectangle
- Outputting menu again to move onto another task
- Gathering input for area of circle
- Calculating area for circle using $\pi * r^2$
- Outputting menu again to move onto another task
- Exiting program using "3"
- Make sure inputs are valid numbers
- Make sure numbers above 3 are not accepted in the menu input gathering.

if option a

if option b

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B. Implementation

```
static void Main(string[] args)
{
    // SEAN GARRINGTON ACAD EMP T3 TEXT BASED MENU

    Menu();

    int menuInput = 0;
    bool exit = false;
    bool selected = false;
    bool ok = int.TryParse(Console.ReadLine(), out menuInput);

    if (menuInput > 3)
    {
        Console.WriteLine("Please try again");
        Console.WriteLine("Choose option:");
        int.TryParse(Console.ReadLine(), out menuInput);
    }

    while (exit == false)
    {
        while (selected == false)
        {
            if (menuInput == 1)
            {
                selected = true;
                double height;
                double width;
                double areaRect;

                Console.WriteLine("Please enter width:");
                double.TryParse(Console.ReadLine(), out width);
                Console.WriteLine("Please enter height:");
                double.TryParse(Console.ReadLine(), out height);

                areaRect = width * height;
            }
        }
    }
}
```

TryParse not used successfully

Separate method?

```

        Console.WriteLine("Area of rectangle is " + areaRect );
        Console.WriteLine("");

        menuInput = 0;
        selected = false;
        Menu();
        int.TryParse(Console.ReadLine(), out menuInput);
    }

    if (menuInput == 2)
    {
        double radius;
        double areaCirc;

        Console.WriteLine("Please enter radius:");
        double.TryParse(Console.ReadLine(), out radius);

        areaCirc = 3.14 * (radius * 2);

        Console.WriteLine("Area of circle is " + areaCirc);

        menuInput = 0;
        selected = false;
        Menu();
        int.TryParse(Console.ReadLine(), out menuInput);
    }

    if (menuInput == 3)
    {
        selected = true;
        Console.WriteLine("Exiting program");
        exit = true;
    }
}

}

}

public static void Menu()
{
    Console.WriteLine("1. Calculate area of rectangle");
    Console.WriteLine("2. Calculate area of circle");
    Console.WriteLine("3. Exit program");

    Console.WriteLine("");
    Console.WriteLine("Choose option:");
}
}

```

Sepo Ap
are thcal?

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```

1  using System;
2
3  namespace AcadEmpT1
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9              // SEAN GARRINGTON ACAD EMPL TASK 2 BMI
10
11              double height = 0;
12              double weight = 0;
13
14              // Gathering user inputs
15
16              Console.WriteLine("Hello, please enter your name");
17              string name = Console.ReadLine();
18
19              Console.WriteLine("Please enter your height in m");
20              double.TryParse(Console.ReadLine(), out height);
21
22              Console.WriteLine("Please enter your weight in kg");
23              double.TryParse(Console.ReadLine(), out weight);
24
25              // BMI Calculation
26
27              double bmi = weight / (height * height);
28              //Console.WriteLine(bmi);
29
30              // BMI Value to Description
31
32              bool output = false;
33
34              while (output == false)
35              {
36                  if (bmi < 18.5)
37                  {
38                      Console.WriteLine("According to your BMI, you are underweight");
39                      output = true;
40                  }
41                  if (bmi > 18.5 && bmi < 25)
42                  {
43                      Console.WriteLine("According to your BMI, you are normal");
44                      output = true;
45                  }
46                  if (bmi > 25 && bmi < 30)
47                  {
48                      Console.WriteLine("According to your BMI, you are overweight");
49                      output = true;
50                  }
51                  if (bmi > 30)
52                  {
53                      Console.WriteLine("According to your BMI, you are obese");
54                      output = true;
55                  }
56              }
57          }
58      }
59  }
60

```



```

1  using System;
2
3  namespace AcadEmplT3v2
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9              // SEAN GARRINGTON ACAD EMP T3 TEXT BASED MENU
10
11              Menu();
12
13              int menuInput = 0;
14              bool exit = false;
15              bool selected = false;
16              int.TryParse(Console.ReadLine(), out menuInput);
17
18              if (menuInput > 3)
19              {
20                  Console.WriteLine("Please try again");
21                  Console.WriteLine("Choose option:");
22                  int.TryParse(Console.ReadLine(), out menuInput);
23              }
24
25              while (exit == false)
26              {
27                  while (selected == false)
28                  {
29                      if (menuInput == 1)
30                      {
31                          selected = true;
32                          double height;
33                          double width;
34                          double areaRect;
35
36                          Console.WriteLine("Please enter width:");
37                          double.TryParse(Console.ReadLine(), out width);
38                          Console.WriteLine("Please enter height:");
39                          double.TryParse(Console.ReadLine(), out height);
40
41                          areaRect = width * height;
42
43                          Console.WriteLine("Area of rectangle is " + areaRect );
44                          Console.WriteLine("");
45
46                          menuInput = 0;
47                          selected = false;
48                          Menu();
49                          int.TryParse(Console.ReadLine(), out menuInput);
50                      }
51
52                      if (menuInput == 2)
53                      {
54                          double radius;
55                          double areaCirc;
56
57                          Console.WriteLine("Please enter radius:");
58                          double.TryParse(Console.ReadLine(), out radius);
59
60                          areaCirc = 3.14 * (radius * 2);
61
62                          Console.WriteLine("Area of circle is " + areaCirc);
63
64                          menuInput = 0;
65                          selected = false;
66                          Menu();
67                          int.TryParse(Console.ReadLine(), out menuInput);
68                      }
69
70                      if (menuInput == 3)
71                      {

```

```
72         selected = true;
73         Console.WriteLine("Exiting program");
74         exit = true;
75     }
76 }
77
78 }
79
80 }
81
82 public static void Menu()
83 {
84     Console.WriteLine("1. Calculate area of rectangle");
85     Console.WriteLine("2. Calculate area of circle");
86     Console.WriteLine("3. Exit program");
87
88     Console.WriteLine("");
89     Console.WriteLine("Choose option:");
90 }
91 }
92 }
93
```