

96/100

Question 1:

A)

1. The function is very vague and doesn't describe what the program is supposed to do leading to problems maintaining the program.
2. The programmer doesn't care about attempting to describe the program to other people leading difficulty for other people who will try to maintain the code
3. The programmer's variables will be named similarly leading to problems trying to maintain the code.
4. It is also a very long name which could cause problems while trying to type it out.

B)

1. Prompt the user for username and password
 - i. If the username and password is incorrect show an error and prompt again
 - ii. If the username and password is wrong 3 times shut down the program
2. Display how many products they wish to enter
3. Prompt them for the amount of products
4. For each of the amount of products they have entered prompt them for the cost of the product and the selling price
 - i. Ensure that the cost of product and selling price are numbers and positive
 - ii. If they aren't show an error and prompt again
 - iii. Calculate the profit by subtracting the cost from the selling price
5. Calculate the total profit by adding each of the profits up
6. Display the total profit

C)

1. Username is correct
2. Password is correct
3. If either the username or password is incorrect 3 times the program stops correctly
4. How many products they wish to enter is a number and a positive number
5. Cost of product is a number and a positive number
6. Selling price is a number and a positive number
7. The program prompts for the correct amount of products
8. The profit is calculated correctly
9. The total profit is calculated correctly

specific numbers? 7

Question 2:

A)

1. Prompt the user for their name
 - i. Name must have a length of atleast 2
2. Prompt the user for their height in metres
 - i. Height must be a number
 - ii. Must be a positive number
 - iii. Cant be above 2.4 metres
 - iv. Cant be below 1 metre
3. Prompt the user for their weight in kg
 - i. Weight must be a number
 - ii. Weight must be a positive number
 - iii. Weight cant be above 300
 - iv. Weight cant be below 30
4. Calculate the bmi by dividing the weight by the height squared
 - i. If BMI is less than 18 set BMI description to Underweight
 - ii. If BMI is between 18.5 and 25 set BMI description to Normal
 - iii. If BMI is between 25.1 and 30 set BMI description to Overweight
 - iv. If BMI is above 30 set BMI decription to Obese
5. Display the Name, BMI, and BMI description

B)

```
//Name validation
bool nameCorrect = false;
string name = "";
while (nameCorrect == false)
{
    Console.WriteLine("Please enter your name:");
    name = Console.ReadLine();
    if (name.Length < 2)
    {
        Console.WriteLine("Your Name is too short. Try again!");
    }
    else
    {
        nameCorrect = true;
    }
}

//Height validation
bool heightCorrect = false;
double height = 0;
while (heightCorrect == false)
{
    Console.WriteLine("Please enter your height in meters:");
    bool heightNum = double.TryParse(Console.ReadLine(), out height);
    if (heightNum == false)
    {
        Console.WriteLine("The Height You have entered is not a number.
Try again!");
    }
    else if (height > 2.4 || height < 1)
    {
        Console.WriteLine("You are either too short or too tall. Try
again!");
    }
}
```

```

    }
    else
    {
        heightCorrect = true;
    }
}

//Weight Validation
bool weightCorrect = false;
double weight = 0;
while (weightCorrect == false)
{
    Console.WriteLine("Please enter your Weight in kg:");
    bool weightNum = double.TryParse(Console.ReadLine(), out weight);
    if (weightNum == false)
    {
        Console.WriteLine("The Weight you have entered is not a number.
Try again!");
    }
    else if (weight > 300 || weight < 30)
    {
        Console.WriteLine("You are either too heavy or too light. Try
again!");
    }
    else
    {
        weightCorrect = true;
    }
}

//BMI calculation
double BMI = weight / (height * height);
string BMIDescription = "Underweight";

//tests if the BMI is between these ranges to change what the BMI
description is
if (BMI >= 18 && BMI <= 25)
{
    BMIDescription = "Normal";
}
else if (BMI >= 25 && BMI <= 30)
{
    BMIDescription = "Overweight";
}
else if (BMI > 30)
{
    BMIDescription = "Obese";
}

//Display the BMI and stuff
Console.WriteLine("{0} Your BMI is {1} this means you are {2}", name,
BMI.ToString("0.00"), BMIDescription);

```

10

Question 3:

A)

1. Display the menu asking the user for 1, rectangle 2 circle, 3 exit
2. Prompt the user for 1,2, or 3
 - i. If anything else show an error
 - ii. If 1 go to rectangle calculator
 - iii. If 2 go to circle calculation
 - iv. If 3 end the program
 - v. If anything else show an error and prompt again
3. Rectangle calculator
 - i. Prompt for rectangle width
 1. must be a positive number
 - ii. prompt for rectangle height
 1. must be a positive number
 - iii. calculate the area of the rectangle by multiplying width and height
 - iv. display the area of the rectangle
 - v. end the program
4. circle calculator
 - i. prompt for circle radius
 1. must be a positive number
 - ii. calculate the area of the circle by squaring the circle radius and multiplying it by Pi.
 - iii. Display the area of the circle
 - iv. End the program

B)

```
//Menu selector validation
bool menuSelectCorrect = false;
int menuSelect = 0;
while (menuSelectCorrect == false)
{
    DisplayMenu();
    bool menuSelectNum = int.TryParse(Console.ReadLine(), out menuSelect);
    if (menuSelectNum == false)
    {
        Console.WriteLine("You must enter a number. Try again! \n");
    }
    else if (menuSelect < 1 || menuSelect > 3)
    {
        Console.WriteLine("You must enter a number between 1 and 3. Try
again! \n");
    }
    else
    {
        menuSelectCorrect = true;
    }
}
if (menuSelect == 1)
{
    RectangleCalculator();
}
if (menuSelect == 2)
{

```

```

        CircleCalculator();
    }
    if (menuSelect == 3)
    {
        Console.WriteLine("Program is exiting...");
        return;
    }
}

static void DisplayMenu()
{
    Console.WriteLine("1. Calculate area of rectangle");
    Console.WriteLine("2. Calculate area of Circle");
    Console.WriteLine("3. Exit");
    Console.Write("Choose option:");
}

static void RectangleCalculator()
{
    Console.WriteLine("Rectangle Calculator");
    //width Validation
    bool recWidthCorrect = false;
    double recWidth = 0;
    while (recWidthCorrect == false)
    {
        Console.Write("Please enter Width:");
        bool recWidthNum = double.TryParse(Console.ReadLine(), out recWidth);

        if (recWidthNum == false)
        {
            Console.WriteLine("You must enter a number. Try again!");
        }
        else if (recWidth <= 0)
        {
            Console.WriteLine("You must enter a positive number. Try again!");
        }
        else
        {
            recWidthCorrect = true;
        }
    }

    //rectangle height validation
    bool recHeightCorrect = false;
    double recHeight = 0;
    while (recHeightCorrect == false)
    {
        Console.Write("Please enter Height:");
        bool recHeightNum = double.TryParse(Console.ReadLine(), out
recHeight);

        if (recHeightNum == false)
        {
            Console.WriteLine("You must enter a number. Try again!");
        }
        else if (recHeight <= 0)
        {
            Console.WriteLine("You must enter a positive number. Try again!");
        }
        else
        {
            recHeightCorrect = true;

```

```

    }
}

//Calculate the area of the rectangle
double recArea = recWidth * recHeight;
Console.WriteLine("The area of the rectangle is: {0}",
recArea.ToString("0.00"));

}
static void CircleCalculator()
{
    Console.WriteLine("Circle Calculator");

    bool cirRadiusCorrect = false;
    double cirRadius = 0;
    while (cirRadiusCorrect == false)
    {
        Console.Write("Please enter the radius of the circle:");
        bool cirRadiusNum = double.TryParse(Console.ReadLine(), out
cirRadius);

        if (cirRadiusNum == false)
        {
            Console.WriteLine("You must enter a number. Try again!");
        }
        else if (cirRadius <= 0)
        {
            Console.WriteLine("You must enter a positive number. Try again!");
        }
        else
        {
            cirRadiusCorrect = true;
        }
    }

    //Circle area calculation
    double cirArea = Math.PI * (cirRadius * cirRadius);
    Console.WriteLine("The area of the circle is {0}",
cirArea.ToString("0.00"));
}
}

```

need extra
comments
in code



```

1  using System;
2
3  namespace ExamQuestion2
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9              //Rhys Hughes hug18845998 Question 2
10
11              //Name validation
12              bool nameCorrect = false;
13              string name = "";
14              while (nameCorrect == false)
15              {
16                  Console.Write("Please enter your name:");
17                  name = Console.ReadLine();
18                  if (name.Length < 2)
19                  {
20                      Console.WriteLine("Your Name is too short. Try again!");
21                  }
22                  else
23                  {
24                      nameCorrect = true;
25                  }
26              }
27
28              //Height validation
29              bool heightCorrect = false;
30              double height = 0;
31              while (heightCorrect == false)
32              {
33                  Console.Write("Please enter your height in meters:");
34                  bool heightNum = double.TryParse(Console.ReadLine(), out height);
35                  if (heightNum == false) // ensures that it is a valid double
36                      number
37                  {
38                      Console.WriteLine("The Height You have entered is not a
39                      number. Try again!");
40                  }
41                  else if (height > 2.4 || height < 1) // makes sure it is between
42                      a set range
43                  {
44                      Console.WriteLine("You are either too short or too tall. Try
45                      again!");
46                  }
47                  else
48                  {
49                      heightCorrect = true;
50                  }
51              }
52
53              //Weight Validation
54              bool weightCorrect = false;
55              double weight = 0;
56              while (weightCorrect == false)
57              {
58                  Console.Write("Please enter your Weight in kg:");
59                  bool weightNum = double.TryParse(Console.ReadLine(), out weight);
60                  if (weightNum == false)
61                  {
62                      Console.WriteLine("The Weight you have entered is not a
63                      number. Try again!");
64                  }
65                  else if (weight > 300 || weight < 30)
66                  {
67                      Console.WriteLine("You are either too heavy or too light.
68                      Try again!");
69                  }
70                  else
71                  {

```

```

66         weightCorrect = true;
67     }
68 }
69
70
71 //BMI calculation
72 double BMI = weight / (height * height);
73 string BMIDescription = "Underweight";
74
75 //tests if the BMI is between these ranges to change what the BMI
76 description is
77 if (BMI >= 18 && BMI <= 25)
78 {
79     BMIDescription = "Normal";
80 }
81 else if (BMI >= 25 && BMI <= 30)
82 {
83     BMIDescription = "Overweight";
84 }
85 else if (BMI > 30)
86 {
87     BMIDescription = "Obese";
88 }
89
90 //Display the BMI and stuff
91 Console.WriteLine("{0} Your BMI is {1} this means you are {2}",
92     name, BMI.ToString("0.00"), BMIDescription);
93
94 }
95

```

```

1  using System;
2
3  namespace ExamQuestion3
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9              //Rhys Hughes hug18845998 Question 3
10
11              //Menu selector validation
12              bool menuSelectCorrect = false;
13              int menuSelect = 0;
14              while (menuSelectCorrect == false)
15              {
16                  DisplayMenu();
17                  bool menuSelectNum = int.TryParse(Console.ReadLine(), out
menuSelect);
18                  if (menuSelectNum == false) //this one gets triggered if
anything but a valid int number is entered
19                  {
20                      Console.WriteLine("You must enter a number. Try again! \n");
21                  }
22                  else if (menuSelect < 1 || menuSelect > 3) // this one validates
that the number is between 1 and 3
23                  {
24                      Console.WriteLine("You must enter a number between 1 and 3.
Try again! \n");
25                  }
26                  else
27                  {
28                      menuSelectCorrect = true;
29                  }
30              }
31
32              //this part chooses what happens after the option is entered
33              if (menuSelect == 1)
34              {
35                  RectangleCalculator();
36              }
37              if (menuSelect == 2)
38              {
39                  CircleCalculator();
40              }
41              if (menuSelect == 3)
42              {
43                  Console.WriteLine("Program is exiting...");
44                  return;
45              }
46          }
47
48          static void DisplayMenu()
49          {
50              Console.WriteLine("1. Calculate area of rectangle");
51              Console.WriteLine("2. Calculate area of Circle");
52              Console.WriteLine("3. Exit");
53              Console.Write("Choose option:");
54          }
55
56          static void RectangleCalculator()
57          {
58              Console.WriteLine("Rectangle Calculator");
59              //width Validation
60              bool recWidthCorrect = false;
61              double recWidth = 0;
62              while (recWidthCorrect == false)
63              {
64                  Console.Write("Please enter Width:");
65                  bool recWidthNum = double.TryParse(Console.ReadLine(), out
recWidth);
66

```

```

67         if (recWidthNum == false) // this one shows if its a valid
double number
68         {
69             Console.WriteLine("You must enter a number. Try again!");
70         }
71     else if (recWidth <= 0) //ensures that the number is positive
72     {
73         Console.WriteLine("You must enter a positive number. Try
again!");
74     }
75     else
76     {
77         recWidthCorrect = true;
78     }
79 }
80
81 //rectangle height validation
82 bool recHeightCorrect = false;
83 double recHeight = 0;
84 while (recHeightCorrect == false)
85 {
86     Console.Write("Please enter Height:");
87     bool recHeightNum = double.TryParse(Console.ReadLine(), out
recHeight);
88
89     if (recHeightNum == false) // checks if the number is a valid
double number
90     {
91         Console.WriteLine("You must enter a number. Try again!");
92     }
93     else if (recHeight <= 0) //ensures that it is positive
94     {
95         Console.WriteLine("You must enter a positive number. Try
again!");
96     }
97     else
98     {
99         recHeightCorrect = true;
100     }
101 }
102
103 //Calculate the area of the rectangle
104 double recArea = recWidth * recHeight;
105 Console.WriteLine("The area of the rectangle is: {0}",
recArea.ToString("0.00"));
106
107 }
108
109 static void CircleCalculator()
110 {
111     Console.WriteLine("Circle Calculator");
112
113     bool cirRadiusCorrect = false;
114     double cirRadius = 0;
115     while (cirRadiusCorrect == false)
116     {
117         Console.Write("Please enter the radius of the circle:");
118         bool cirRadiusNum = double.TryParse(Console.ReadLine(), out
cirRadius);
119
120         if (cirRadiusNum == false) // checks if the number is a valid
double number
121         {
122             Console.WriteLine("You must enter a number. Try again!");
123         }
124         else if (cirRadius <= 0) // ensures that it is positive
125         {
126             Console.WriteLine("You must enter a positive number. Try
again!");
127         }
128         else

```

```
129         {
130             cirRadiusCorrect = true;
131         }
132     }
133
134     //Circle area calculation
135     double cirArea = Math.PI * (cirRadius * cirRadius);
136     Console.WriteLine("The area of the circle is {0}",
137         cirArea.ToString("0.00"));
138 }
139 }
140 }
141 }
```

