

WORKSHEET 1a

by Serena Jonathan

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WORKSHEET 1a – TESTING (Using Variables)

1. Original code:

[Copy and paste your original code from Moodle into this box. Do not change it.]

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <string.h>
void main()
{
    int studentNum;
    char houseNum[10];
    char streetName[30];
    int age;

    printf("Please enter student number : ");
    scanf("%d", &studentNum);

    printf("Please enter house number");
    scanf("%s", &houseNum);

    printf("Please enter street name: ");
    scanf("%s", &streetName);

    printf("Please enter age : ");
    scanf("%d", &age);

    if(strlen(houseNum)>5)
    {
        printf("invalid.");
    }

    if (studentNum > 2399999)
    {
        printf("invalid. Too high");
    }

    if (age<18)
    {
        printf("Too young to be university student please return when 18 or older");
    }
}
```


2. Code Testing

For each test below, run your code and enter the values provided. Provide a screenshot of the programme running. Did the programme behave correctly or did it do something unexpected? Fill in a box for each test below.

Student number:

- i. Enter 2341516
- ii. Leave blank
- iii. Enter -45

House number:

- i. Enter 11A
- ii. Leave blank
- iii. Enter 123417899 (ie too long for a typical British street)

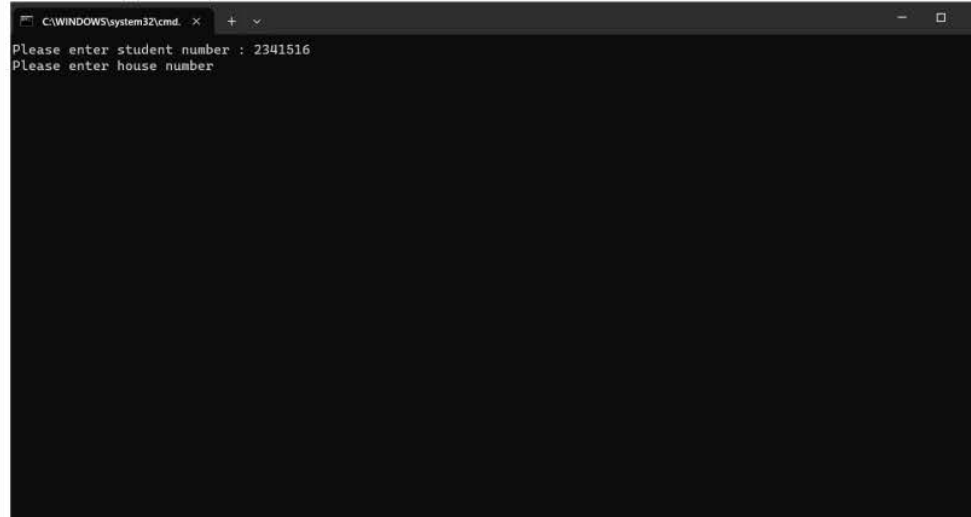
Age:

- i. Enter 34
- ii. Enter 150
- iii. Enter -4
- iv. Enter a letter

Test:

Student number i. Enter 2341516

Screenshot(s) of output:



Result: Did the programme behave as expected ie syntactically and logically correct?

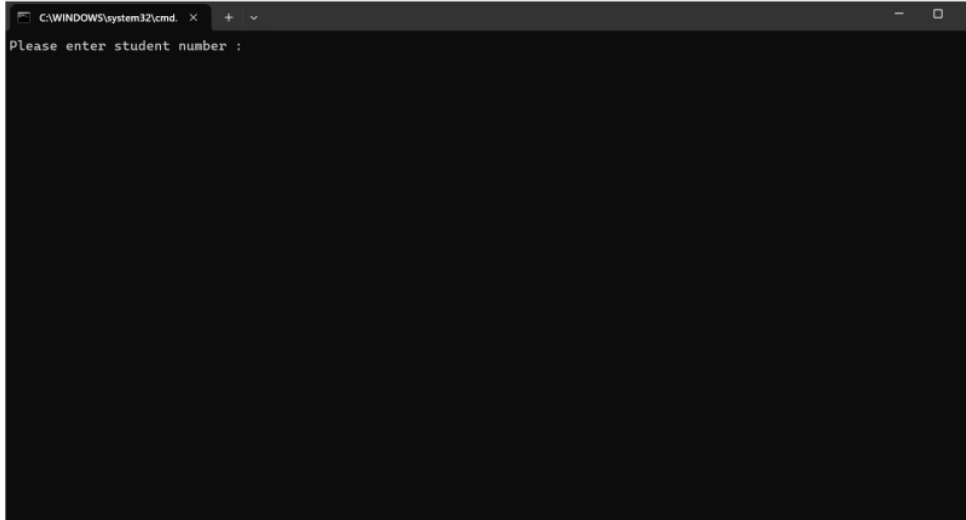
YES

If NO, what went wrong?

N/A

Test:
Student number ii Leave blank

Screenshot(s) of output:



Result: Did the programme behave as expected ie syntactically and logically correct?
YES The programme does not allow the user to proceed until they have entered a value.
If NO, what went wrong?

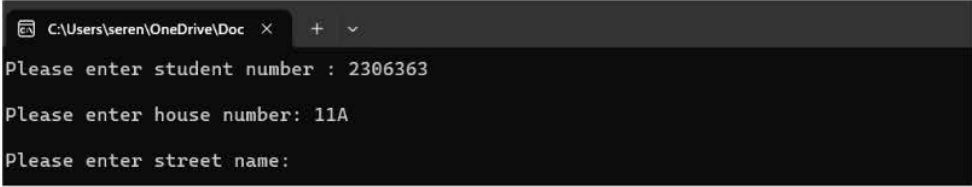
Continue the rest of the tests below. (Copy and paste a box for each one)

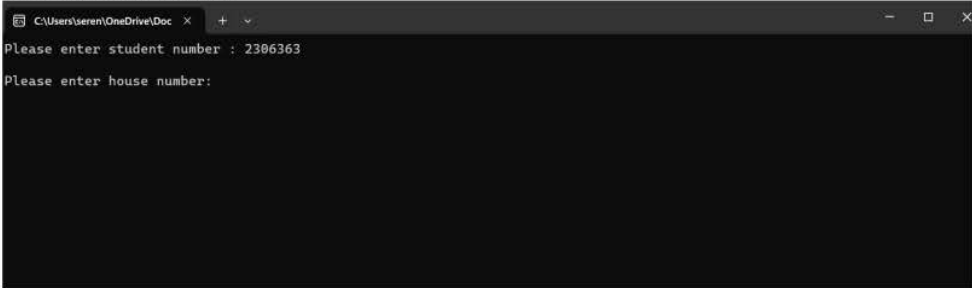
i. Test: Student number Enter -45

Screenshot(s) of output:



Result: Did the programme behave as expected ie syntactically and logically correct?
NO (delete as appropriate)
If NO, what went wrong?
"-45" is not a valid student number but the programme accepted it. A validation rule should be added to ensure the user cannot enter a value that is less than '0'.

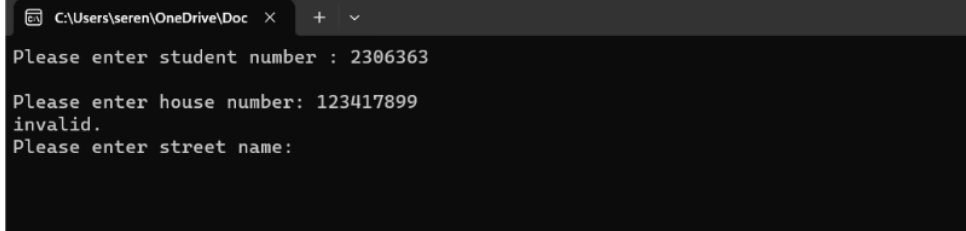
Test: i. House Number : Enter 11A
Screenshot(s) of output: 
Result: Did the programme behave as expected ie syntactically and logically correct? YES/NO If NO, what went  1?

Test: ii House Number, Leave blank
Screenshot(s) of output: 
Result: Did the programme behave as expected ie syntactically and logically correct? YES/NO If NO, what went  2?

Test:

iii House Number, Enter a value that is too long ie 123417899

Screenshot(s) of output:

A screenshot of a terminal window with a dark background. The text displayed is: "Please enter student number : 2306363", "Please enter house number: 123417899", "invalid.", and "Please enter street name:". The window title bar shows "C:\Users\seren\OneDrive\Doc" and some window control icons.

```
C:\Users\seren\OneDrive\Doc  X  +  v
Please enter student number : 2306363
Please enter house number: 123417899
invalid.
Please enter street name:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

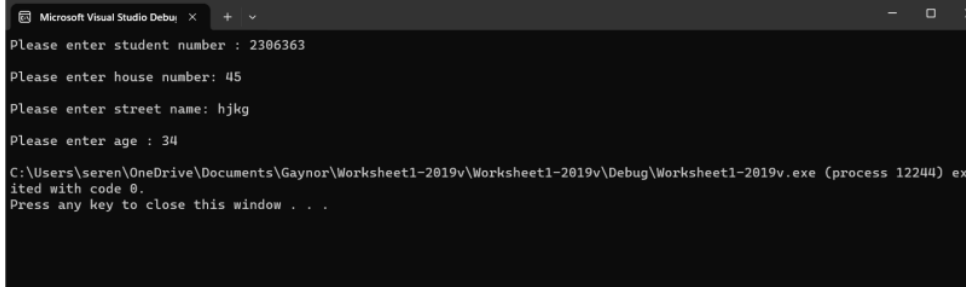
YES

If NO, what went wrong?

Test:

Age i, Enter 34

Screenshot(s) of output:

A screenshot of a terminal window titled "Microsoft Visual Studio Debu". The text displayed is: "Please enter student number : 2306363", "Please enter house number: 45", "Please enter street name: hjkg", "Please enter age : 34", and a system message: "C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet1-2019v\Worksheet1-2019v\Debug\Worksheet1-2019v.exe (process 12244) exited with code 0. Press any key to close this window . . .".

```
Microsoft Visual Studio Debu  X  +  v  -  □  X
Please enter student number : 2306363
Please enter house number: 45
Please enter street name: hjkg
Please enter age : 34
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet1-2019v\Worksheet1-2019v\Debug\Worksheet1-2019v.exe (process 12244) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

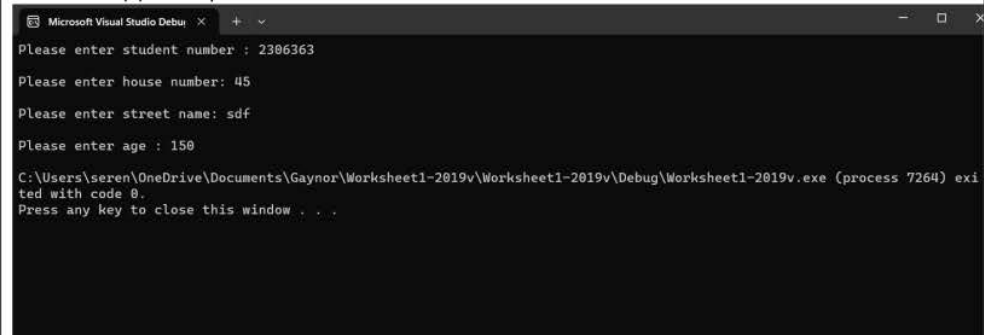
YES

If NO, what went wrong?

Test:

Age ii, Enter 150

Screenshot(s) of output:



```
Microsoft Visual Studio Debug
Please enter student number : 2306363
Please enter house number: 45
Please enter street name: sdf
Please enter age : 150
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet1-2019v\Worksheet1-2019v\Debug\Worksheet1-2019v.exe (process 7264) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO

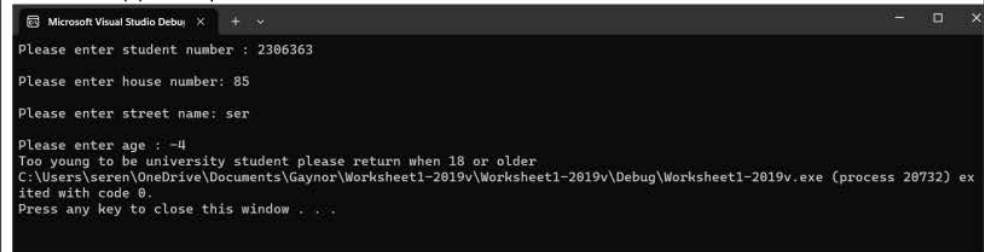
If NO, what went wrong?

Syntactically is it correct, however to improve how the programme behaves logically, a validation should be written to ensure users cannot input the age '150' as it is not logical that a student would be this age.

Test:

Age iii, Enter -4

Screenshot(s) of output:

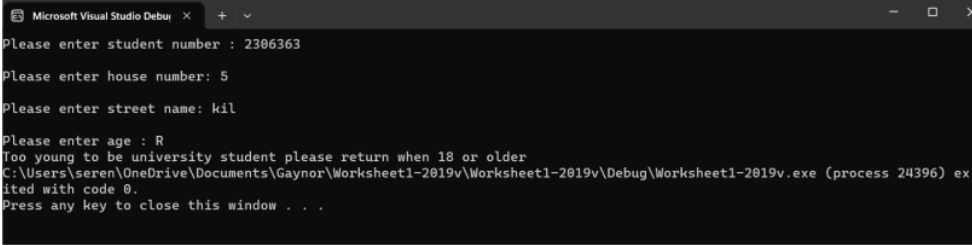


```
Microsoft Visual Studio Debug
Please enter student number : 2306363
Please enter house number: 85
Please enter street name: ser
Please enter age : -4
Too young to be university student please return when 18 or older
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet1-2019v\Worksheet1-2019v\Debug\Worksheet1-2019v.exe (process 20732) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES

If NO, what went wrong?

Test:
Age iiiii, Enter a letter
Screenshot(s) of output:  <pre> Microsoft Visual Studio Debug Please enter student number : 2306363 Please enter house number: 5 Please enter street name: kil Please enter age : R Too young to be university student please return when 18 or older C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet1-2019v\Worksheet1-2019v\Debug\Worksheet1-2019v.exe (process 24396) exited with code 0. Press any key to close this window . . . </pre>
Result: Did the programme behave as expected ie syntactically and logically correct? NO If NO, what went wrong? Upon entering a letter or 'char' value when the program was expecting an 'int', the program returned the 'IF' case I had written for when users enter a value that is less than '18'. This is unexpected as a letter is clearly not valid to be tested under the validation of being less than '18'. Thus, to improve a validation code must be inputted to ensure that a user cannot enter a 'char' under any circumstances.

1. Consider the results of the above tests and revisit your code in order to solve the problems.
(Note: you may not be able to solve all of them, but solve as many as you can.)
2. Paste your revised code here:

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <string.h>

int main(void)
{
    int studentNum;
    char houseNum[10];
    char streetName[30];
    int age;
    int numberRead;

    printf("Please enter your student number : ");
    scanf("%d", &studentNum);

    while (studentNum > 2399999 || studentNum <= 0)
    {
        printf("Number cannot be higher than 2399999 or lower than
'0'. ");
        printf("Please try again: ");
        scanf("%d", &studentNum);
    }

    printf("\nPlease enter house number: ");
    scanf("%s", &houseNum);

    while (strlen(houseNum) > 5 )
    {
        printf("invalid. House number cannot be more than 5 digits");
        printf("\nPlease try again. ");
        scanf("%s", &houseNum);
    }

    printf("\nPlease enter street name: ");
    scanf("%s", &streetName);

    printf("\nEnter your age: ");
    while (scanf("%d", &age) != 1 || age < 18 || age > 130)
    {
        printf("\nInvalid input. Enter a number between 18 - 130 for
valid student age. Please try again: ");
        while (getchar() != '\n');
    }
    printf("\nValid information for student. Thank you for completing the
form. \n");

    return 0;
}
```


WORKSHEET 1a

GRADEMARK REPORT

FINAL GRADE

/10

GENERAL COMMENTS

Worksheet 1:

Coding: Good progress made here on validation. You could also have validated the length of streetname - while we didn't explicitly test for it, it should not be overly long.

4/5

Testing:

Good, you have understood this section well and suitably presented your results. I think you just missed a couple that should have been "YES"

4.5/5

Total: 8.5/10

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Comment 1

Yes or no? :)



Comment 2

Yes or no?

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WORKSHEET 2

by Serena Jonathan

Submission date: 10-Jan-2024 01:32AM (UTC+0000)

Submission ID: 221282909

File name: 50568_Serena_Jonathan_WORKSHEET_2_541134_1119580083.docx (225.84K)

Word count: 493

Character count: 2503

WORKSHEET 2a – TESTING (Circle/Triangle)

1. Original code:

[Copy and paste your original code from Moodle into this box. Do not change it.]

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <string.h>
#include <math.h>
#define PI 3.142

void main()
{
    float radius;
    float areaofCircle;
    float base;
    float height;
    float areaofTriangle;
    float areaofBlue;

    printf("Please enter the radius of the circle: ");
    scanf("%f", &radius);

    while (radius <= 0)
    {
        printf("invalid. Cannot be '0' or less");
        printf("\nTry again: ");
        scanf("%f", &radius);
    }

    areaofCircle = PI * pow(radius,2);

    printf("\narea of your circle is %f\n", areaofCircle);

    printf("\nPlease enter base length of triangle: ");
    scanf("%f", &base);

    while (base <= 0)
    {
        printf("invalid. Cannot be '0' or less");
        printf("\nTry again: ");
        scanf("%f", &base);
    }

    printf("\nPlease enter height of triangle: ");
```

2. Code Testing

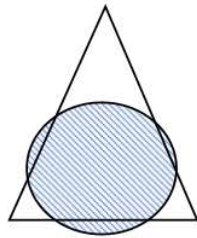
For each test below, run your code and enter the values provided. Provide a screenshot of the programme output. Did the programme behave correctly or did it do something unexpected? Fill in a box for each test below.

Input:

- i. Enter dimensions: Radius: 5
- ii. Enter dimensions: Radius: -5
- iii. Enter dimensions: Base: 4.5
- iv. Enter dimensions: Base: -18
- v. Enter dimensions: Height: 15.4
- vi. Enter dimensions Height: -3

Logic:

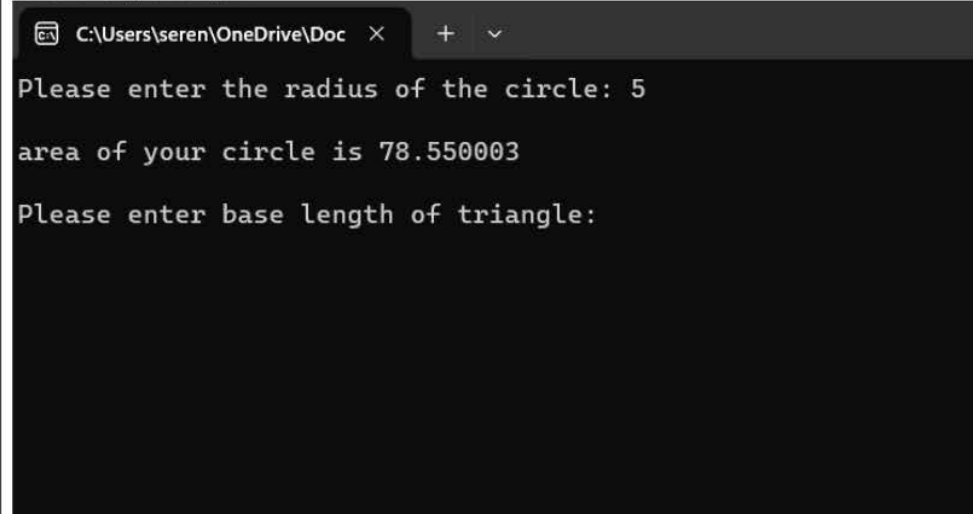
- i. Enter dimensions: Radius 10, Base 6, height 8. The result should be **290.2** (314.2 for the area of the circle minus 24 for the area of the triangle)
- ii. Enter dimensions: Radius 2, Base 6, height 8. The result is logically not possible. The base is overflowing the circle (approximation shown below). Does your program recognise and account for this?



Test:

i) 222Input - Enter dimensions: Radius: 5

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc x + v
Please enter the radius of the circle: 5
area of your circle is 78.550003
Please enter base length of triangle:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

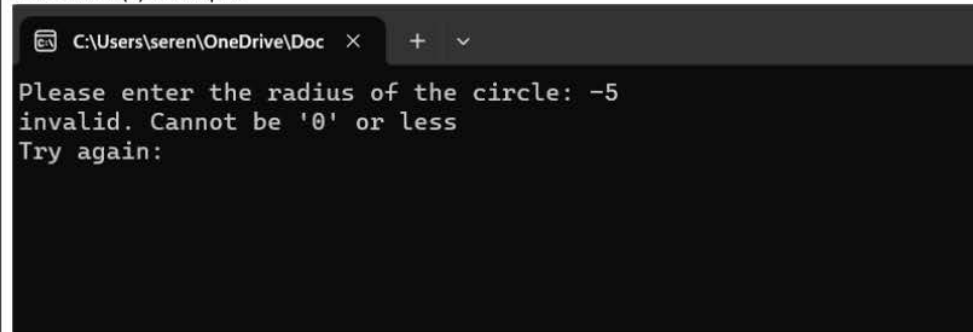
YES

If NO, what went wrong?

Test:

ii) Enter dimensions: Radius: - 5

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc x + v
Please enter the radius of the circle: -5
invalid. Cannot be '0' or less
Try again:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES/NO (delete as appropriate)

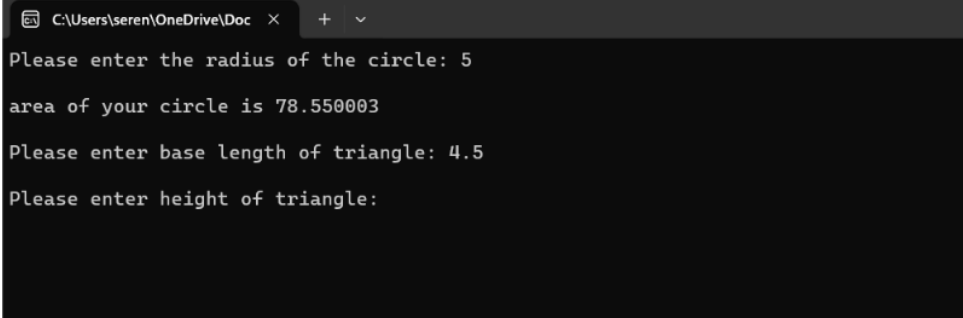
If NO, what went wrong?



Continue the rest of the tests below. (Copy and paste a box for each one)

Test: iii Enter dimensions: Base: 4.5

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc x + v
Please enter the radius of the circle: 5
area of your circle is 78.550003
Please enter base length of triangle: 4.5
Please enter height of triangle:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

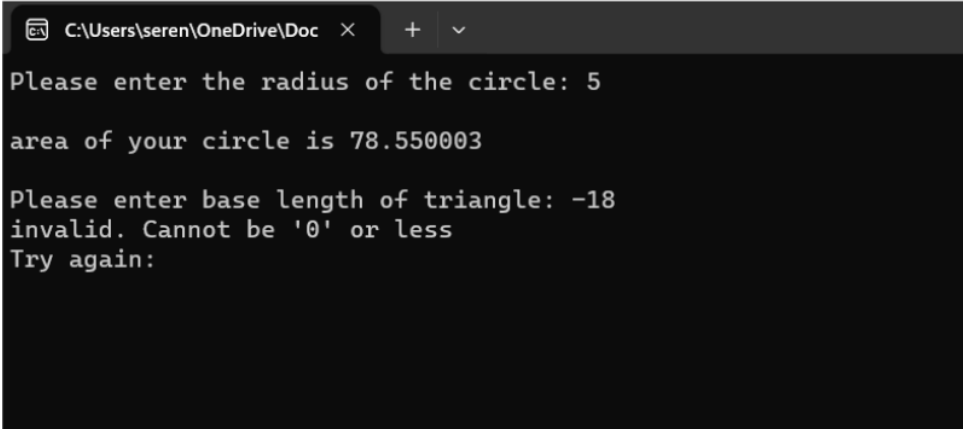
YES

If NO, what went wrong?

Test:

iv Enter dimensions: Base: -18

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc x + v
Please enter the radius of the circle: 5
area of your circle is 78.550003
Please enter base length of triangle: -18
invalid. Cannot be '0' or less
Try again:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

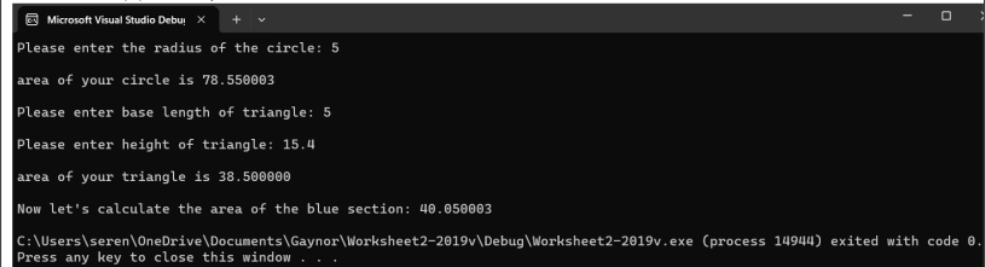
YES

If NO, what went wrong?

Test:

v. Enter dimensions: Height: 15.4

Screenshot(s) of output:



```
Microsoft Visual Studio Debug Console
Please enter the radius of the circle: 5
area of your circle is 78.550003
Please enter base length of triangle: 5
Please enter height of triangle: 15.4
area of your triangle is 38.500000
Now let's calculate the area of the blue section: 40.050003
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet2-2019v\Debug\Worksheet2-2019v.exe (process 14944) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

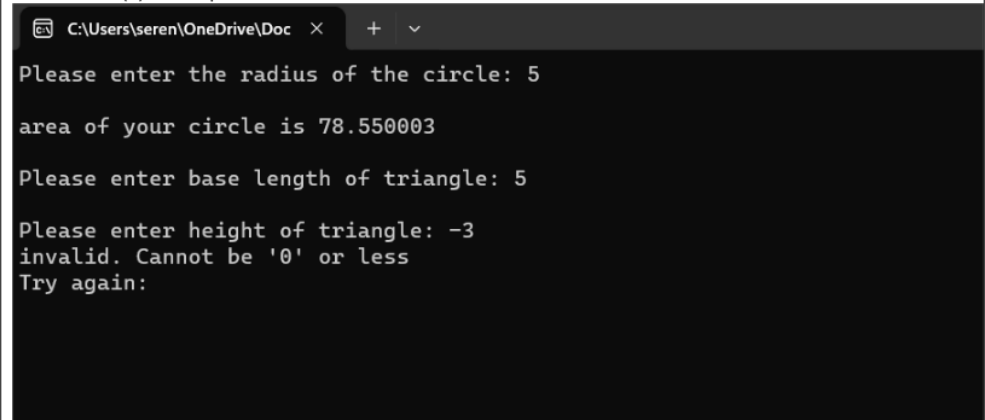
YES

If NO, what went wrong?

Test:

vi. Enter dimensions Height: -3

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc
Please enter the radius of the circle: 5
area of your circle is 78.550003
Please enter base length of triangle: 5
Please enter height of triangle: -3
invalid. Cannot be '0' or less
Try again:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

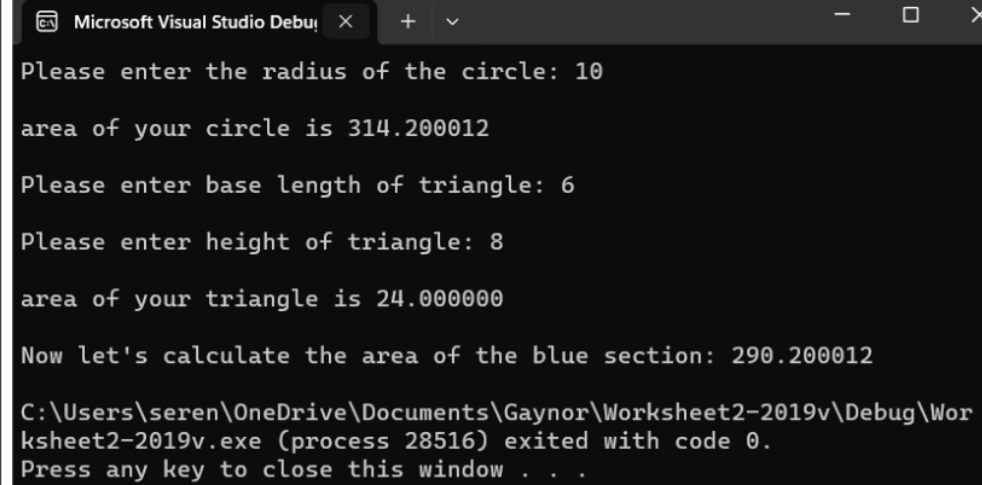
YES

If NO, what went wrong?

Test:

- i. Enter dimensions: Radius 10, Base 6, height 8. The result should be **290.2** (314.2 for the area of the circle minus 24 for the area of the triangle)

Screenshot(s) of output:



```
Microsoft Visual Studio Debug Console
Please enter the radius of the circle: 10
area of your circle is 314.200012
Please enter base length of triangle: 6
Please enter height of triangle: 8
area of your triangle is 24.000000
Now let's calculate the area of the blue section: 290.200012
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet2-2019v\Debug\Worksheet2-2019v.exe (process 28516) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES

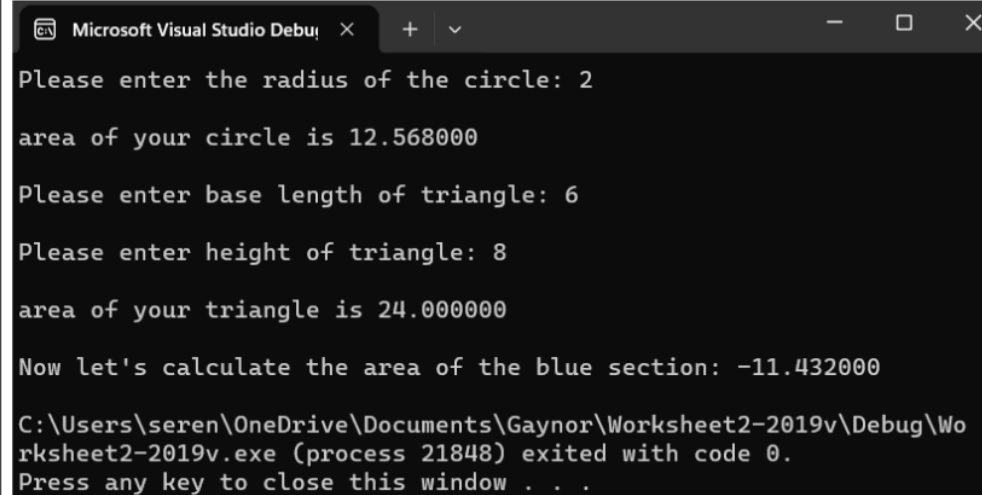
If NO, what went wrong?

Test:

- li Enter dimensions: Radius 2, Base 6, height 8. The result is logically not possible. The base is overflowing the circle (approximation shown below). Does your program recognise and account for this?

Screenshot(s) of output:

2



```
Microsoft Visual Studio Debug Console
Please enter the radius of the circle: 2
area of your circle is 12.568000
Please enter base length of triangle: 6
Please enter height of triangle: 8
area of your triangle is 24.000000
Now let's calculate the area of the blue section: -11.432000
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet2-2019v\Debug\Worksheet2-2019v.exe (process 21848) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO

If NO, what went wrong?

A minus value was given when the programme should be edited to recognise and account for this.

3. Consider the results of the above tests and revisit your code in order to solve any problems discovered at the testing phase. (Note: you may not be able to solve all of them, but solve as many as you can.)

Paste your revised code here:

[Copy and paste your revised code here – note, do not use a screenshot]

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <string.h>
#include <math.h>
#define PI 3.142

void main()
{
    float radius;
    float areaofCircle;
    float base;
    float height;
    float areaofTriangle;
    float areaofBlue;

    printf("Please enter the radius of the circle: ");
    scanf("%f", &radius);

    while (radius <= 0)
    {
        printf("invalid. Cannot be '0' or less");
        printf("\nTry again: ");
        scanf("%f", &radius);
    }

    areaofCircle = PI * pow(radius, 2);

    printf("\narea of your circle is %.2f\n", areaofCircle);

    printf("\nPlease enter base length of triangle: ");
    scanf("%f", &base);

    while (base <= 0)
    {
        printf("invalid. Cannot be '0' or less");
        printf("\nTry again: ");
        scanf("%f", &base);
    }

    printf("\nPlease enter height of triangle: ");
    scanf("%f", &height);

    while (height <= 0)
    {
        printf("invalid. Cannot be '0' or less");
    }
```

WORKSHEET 2

GRADEMARK REPORT

FINAL GRADE

/10

GENERAL COMMENTS

Worksheet 2:

Coding: A good attempt and progress has been made with validating the relative sizes of square and circle. The formula for this could be a bit more refined.

4/5

Testing:

Good - presented well.

5/5

Total: 9/10

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 **Comment 1**
YES :)

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WORKSHEET 3

by Serena Jonathan

Submission date: 10-Jan-2024 01:37AM (UTC+0000)

Submission ID: 221283177

File name: 50568_Serena_Jonathan_WORKSHEET_3_541134_1163785722.docx (220.58K)

Word count: 518

Character count: 2402

WORKSHEET 3 – TESTING (Arrays)

1. Original code:

[Copy and paste your original code from Moodle into this box. Do not change it.]

```
float price[6];
    char product[6][10];
    float total;
    float staffDiscount;
    for (int i = 0; i < 6; i++)
    {
        printf("Please enter name of product ");
        scanf("%s", &product[i]);

        printf("Please enter the price of product: ");
        scanf("%f", &price[i]);
    }

    printf("\n\nProducts entered: \n");

    for (int i = 0; i < 6; i++)
    {
        printf("%s \t %f\n", product[i], price[i]);
    }

    total = price[0] + price[1] + price[2] + price[3] + price[4] + price[5];
    printf("\n\nTotal price of products is: %.2f", total);

    staffDiscount = total * 0.85;
    printf("\nhere is the price with a staff discount %.2", staffDiscount);

    if(price <= -1)
    {
        printf("That is an invalid price please try again");
    }

}
```

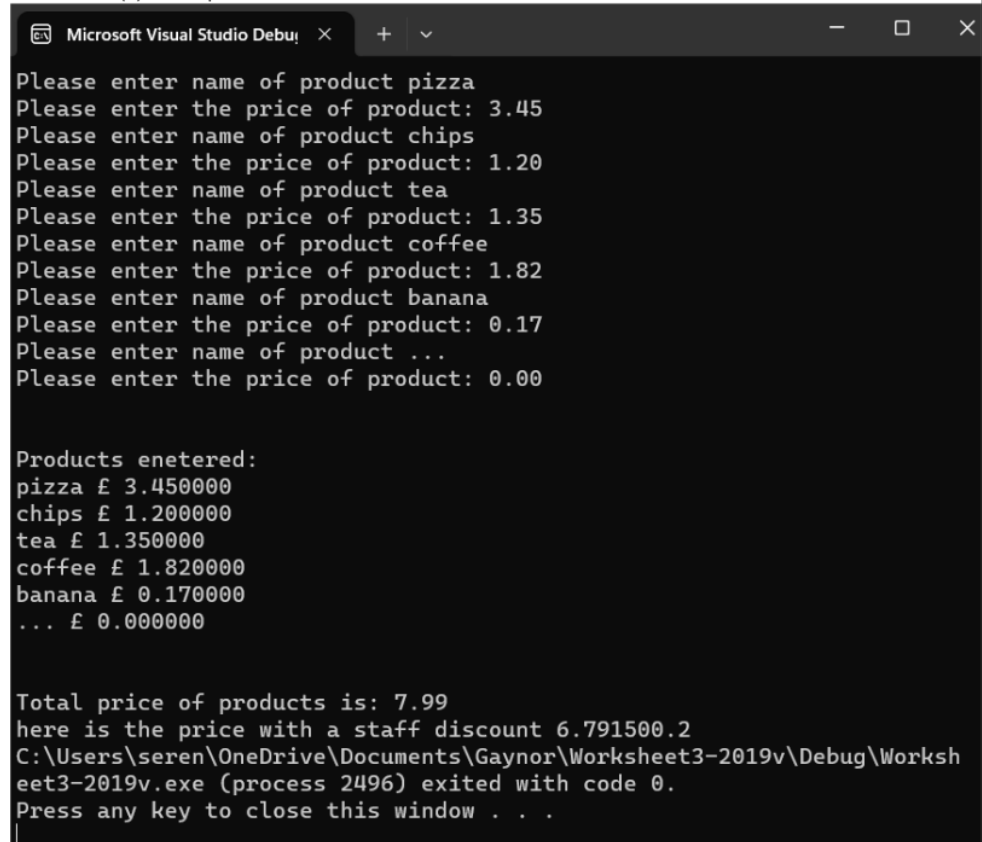
2. Code Testing

For each test below, run your code and enter the values provided. Provide a screenshot of the programme output. Did the programme behave correctly or did it do something unexpected? Fill in a box for each test below.

- i. Enter the 5 normal values as shown on the example screenshot (on the question sheet)
ie *pizza 3.45, chips 1.20, tea 1.35, coffee 1.82 and banana 0.17*
Double check the staff discount for the above values, is it correct?
- ii. Enter *pizza -2.34 chips -1.10, tea -1.22, coffee -2.05 and banana -0.18*
- iii. Enter your own values, but leave some of them blank

Test: i. Enter the 5 normal values as shown on the example
ie *pizza 3.45, chips 1.20, tea 1.35, coffee 1.82 and banana 0.17*
Double check the staff discount for the above values, is it correct?

Screenshot(s) of output:



```
Microsoft Visual Studio Debug Console
Please enter name of product pizza
Please enter the price of product: 3.45
Please enter name of product chips
Please enter the price of product: 1.20
Please enter name of product tea
Please enter the price of product: 1.35
Please enter name of product coffee
Please enter the price of product: 1.82
Please enter name of product banana
Please enter the price of product: 0.17
Please enter name of product ...
Please enter the price of product: 0.00

Products entered:
pizza £ 3.450000
chips £ 1.200000
tea £ 1.350000
coffee £ 1.820000
banana £ 0.170000
... £ 0.000000

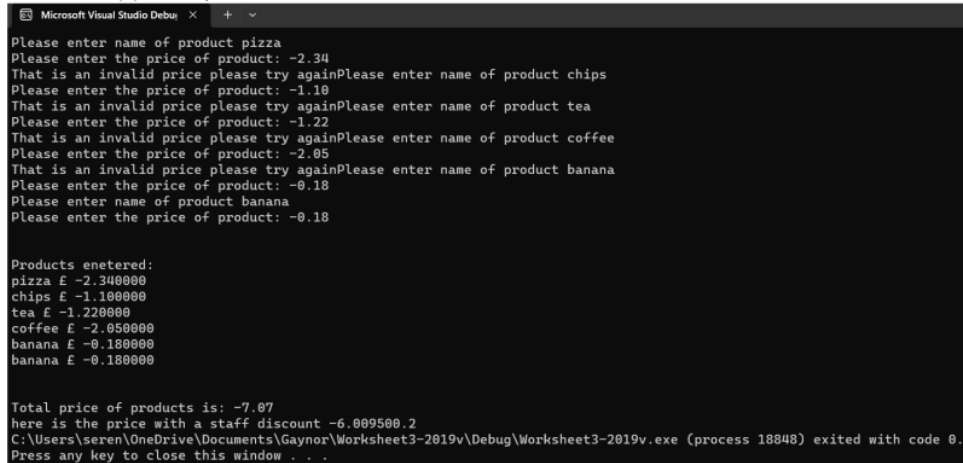
Total price of products is: 7.99
here is the price with a staff discount 6.791500.2
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet3-2019v\Debug\Worksheet3-2019v.exe (process 2496) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?
NO
If NO, what went wrong?

My code allowed the user to input 6 items instead of 5. Fortunately, everything else behaved as expected. To clean and improve this code however I will add new lines so it is easier to read and also include '£' signs in the total price and staff discount price and ensure that they are also rounded up to 2 decimal places to make it more readable and user friendly.

Test: ii. Enter *pizza -2.34 chips -1.10, tea -1.22, coffee -2.05 and banana -0.18*

Screenshot(s) of output:



```
Microsoft Visual Studio Debug
Please enter name of product pizza
Please enter the price of product: -2.34
That is an invalid price please try againPlease enter name of product chips
Please enter the price of product: -1.10
That is an invalid price please try againPlease enter name of product tea
Please enter the price of product: -1.22
That is an invalid price please try againPlease enter name of product coffee
Please enter the price of product: -2.05
That is an invalid price please try againPlease enter name of product banana
Please enter the price of product: -0.18
Please enter name of product banana
Please enter the price of product: -0.18

Products entered:
pizza £ -2.340000
chips £ -1.100000
tea £ -1.220000
coffee £ -2.050000
banana £ -0.180000
banana £ -0.180000

Total price of products is: -7.07
here is the price with a staff discount -6.009500.2
C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet3-2019v\Debug\Worksheet3-2019v.exe (process 18848) exited with code 0.
Press any key to close this window . . .
```

Result: Did the programme behave as expected ie syntactically and logically correct?

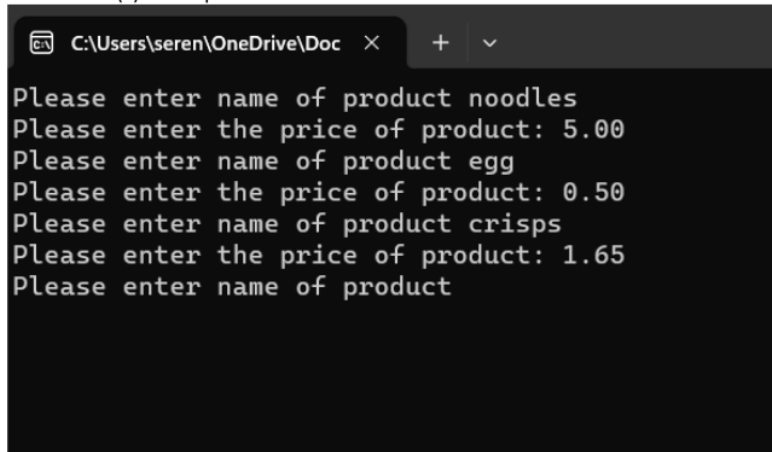
NO

If NO, what went wrong?

The programme allows me to input an extra item and price than needed. Although an error message shows if the user inputs a negative number as the price which is expected, once the array is closed, the programme adds the negative values together and provides the user with a total and a discount total which I believe should not be the case.

Test: iii) Enter a few of your own values, leave some of the inputs blank

Screenshot(s) of output:



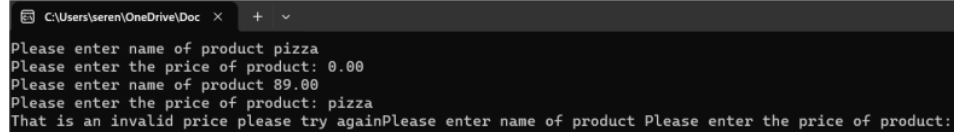
```
C:\Users\seren\OneDrive\Doc
Please enter name of product noodles
Please enter the price of product: 5.00
Please enter name of product egg
Please enter the price of product: 0.50
Please enter name of product crisps
Please enter the price of product: 1.65
Please enter name of product
```

Result: Did the programme behave as expected ie syntactically and logically correct?
YES
If NO, what went wrong?

Any other tests you feel may be relevant, or reveal a strength or deficiency in your original code, please detail below:

Test: Entering a 'price' in the product name prompt and a 'string' in the price prompt.

Screenshot(s) of output:



The screenshot shows a terminal window with the following text:

```
C:\Users\seren\OneDrive\Doc x + v
Please enter name of product pizza
Please enter the price of product: 0.00
Please enter name of product 89.00
Please enter the price of product: pizza
That is an invalid price please try againPlease enter name of product Please enter the price of product:
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO (delete as appropriate)

If NO, what went wrong?

Although it is good that an error showed when the user inputs a string in the 'price' prompt, it skips the chance for the user to enter the name of the product again and goes straight to the 'price' prompt.

3. Consider the results of the above tests and revisit your code in order to solve any problems discovered at the testing phase. (Note: you may not be able to solve all of them, but solve as many as you can.)

Paste your revised code here:

```
[Copy and paste your revised code here – note, do not use a screenshot]
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <math.h>
#include <string.h>
#include <ctype.h>

void main()
{
    float price[6];
    char product[5][10];
    float total;
    float staffDiscount;

    for (int i = 0; i < 5; i++)
    {
        printf("Please enter name of product: ");
        scanf("%s", &product[i]);
        for (int j = 0; product[i][j] != '\0'; j++)
        {
            while (isdigit(product[i][j]) != 0)
            {
                printf("Error. Product name cannot be a number. Please
try again: ");
                scanf("%s", &product[i]);
            }
            printf("Please enter the price of product: \x9c ");
            while (scanf("%f", &price[i]) != 1 || price <= 0)
            {
                printf("\nInvalid input. Please try again and enter a
price: \x9c");
                scanf("%f", &price[i]);
                while (getchar() != '\n');
            }
            printf("\n");
        }

        printf("\n\nProducts entered: \n");

        for (int i = 0; i < 5; i++)
        {
            printf("%s \x9c %f\n", product[i], price[i]);
        }

        total = price[0] + price[1] + price[2] + price[3] + price[4];
        printf("\n\nTotal price of products is: \x9c %.2f", total);

        staffDiscount = total * 0.85;
        printf("\nHere is the price with a staff discount \x9c %.2f",
staffDiscount);
    }
}
```

WORKSHEET 3

GRADEMARK REPORT

FINAL GRADE

/20

GENERAL COMMENTS

Worksheet 3:

Coding: Good progress on the validation/ the letter/number issue.

You could revise for efficiency. You need to loop total = price[0]+price[1]+price[2]+price[3]+price[4] rather than hard code.

8/10

Testing:

Although many of the tests failed, some good discussion here of why

8/10

Total: 16/20

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WORKSHEET 4

by Serena Jonathan

Submission date: 10-Jan-2024 01:38AM (UTC+0000)

Submission ID: 221283258

File name: 50568_Serena_Jonathan_WORKSHEET_4_541134_1476100369.docx (92.64K)

Word count: 392

Character count: 1799

WORKSHEET 4 – TESTING (Arrays)

1. Original code:

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
#include "Header.h"

void main()
{
    srand(time(NULL));

    char choice;
    int rand1, rand2, rand3;
    int winnings = 0;

    printf("Spin?");
    scanf(" %c", &choice);

    while (choice != 'n')
    {
        rand1 = randomNumber();
        rand2 = randomNumber();
        rand3 = randomNumber();

        printf("%d %d %d", rand1, rand2, rand3);
        if (rand1 == 5 && rand2 == 5 && rand3 == 5)
        {
            printf("\nYou win! you have 2100 points");
            winnings = winnings + 2100;
        }
        else if (rand1 == rand2 && rand1 == rand3)
        {
            printf("\nYou win! and earned 20 points");
            winnings = winnings + 20;
        }
        else if (rand1 == 5 && rand2 == 5 || rand2 == 5 && rand3 == 5 || rand1 == 5 &&
rand3)
        {
            printf("\nYou earned 100 points");
            winnings = winnings + 100;
        }
        else
```

2. Code Testing

For each test below, run your code and enter the values provided. Provide a screenshot of the programme output. Did the programme behave correctly or did it do something unexpected? Fill in a box for each test below.

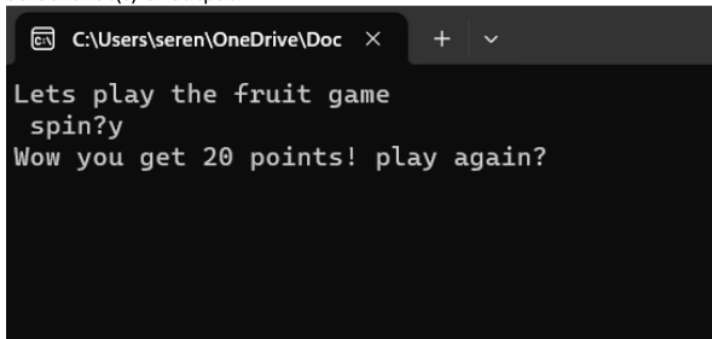
Test the following values for your fruit machine:

- i. 4 4 4 (20 points)
- ii. 1 3 2 (0 points)
- iii. 5 5 3 (100 points)
- iv. 5 2 5 (100 points)
- v. 1 5 5 (100 points)
- vi. 5 5 5 (2000 points)

vii. Enter "N" when user is asked whether they wish to make another spin

Test: i. 444 (20 points)

Screenshot(s) of output:



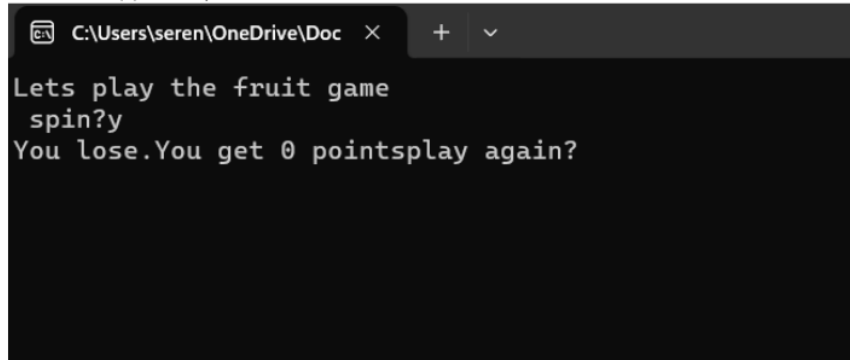
Result: Did the programme behave as expected ie syntactically and logically correct?

YES

If NO, what went wrong?

Test: ii. 1 3 2 (0 points)

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc x + v
Lets play the fruit game
spin?y
You lose.You get 0 pointsplay again?
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES

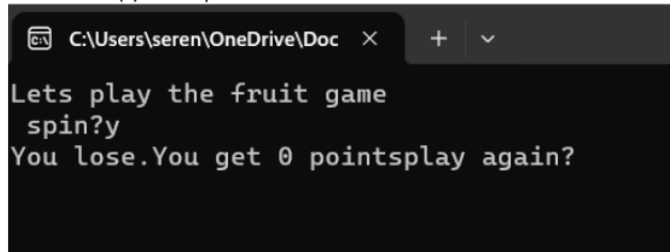
If NO, what went wrong?

Continue the rest of the tests below. (Copy and paste a box for each one)

Test:

iii 5 5 3 (100 points)

Screenshot(s) of output:



```
C:\Users\seren\OneDrive\Doc x + v
Lets play the fruit game
spin?y
You lose.You get 0 pointsplay again?
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO

If NO, what went wrong?

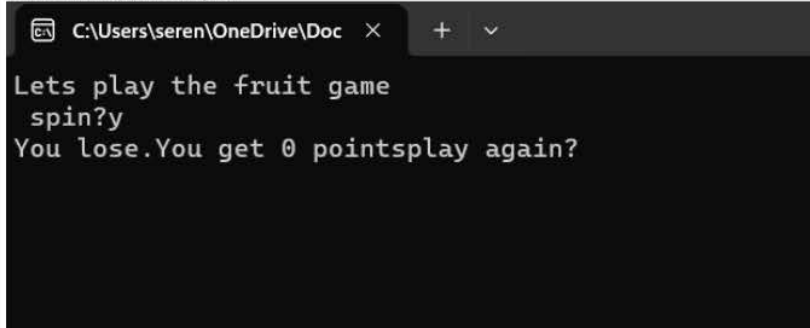
User was supposed to receive 100 points but instead they receive 0 points.

Any other tests you feel may be relevant, or reveal a strength or deficiency in your original code, please detail below:

Test:

vii. 5 2 5 (100 points)

Screenshot(s) of output:



Result: Did the programme behave as expected ie syntactically and logically correct?

NO

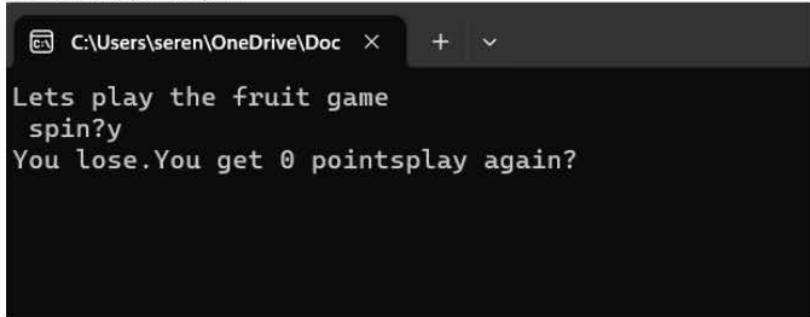
If NO, what went wrong?

User was supposed to receive 100 points but instead they receive 0 points.

Test:

viii. 1 5 5 (100 points)

Screenshot(s) of output:



Result: Did the programme behave as expected ie syntactically and logically correct?

NO

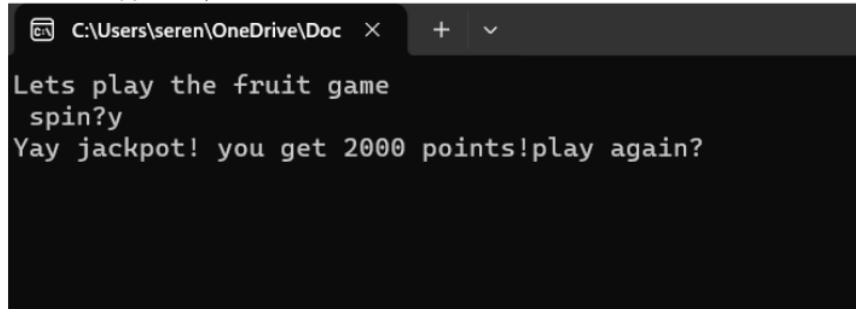
If NO, what went wrong?

User was supposed to receive 100 points but instead they receive 0 points.

Test:

5 5 5 (2000 points)

Screenshot(s) of output:

A screenshot of a terminal window with a dark background and white text. The window's title bar shows the file path 'C:\Users\seren\OneDrive\Doc' and standard window controls. The terminal output consists of three lines: 'Lets play the fruit game', 'spin?y', and 'Yay jackpot! you get 2000 points!play again?'.

```
C:\Users\seren\OneDrive\Doc × + v  
Lets play the fruit game  
spin?y  
Yay jackpot! you get 2000 points!play again?
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES

If NO, what went wrong?

3. Consider the results of the above tests and revisit your code in order to solve any problems discovered at the testing phase. (Note: you may not be able to solve all of them, but solve as many as you can.)

Paste your revised code here:

```
[Copy and paste your revised code here – note, do not use a screenshot]
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

void main()
{
    int fruitN1;
    int fruitN2;
    int fruitN3;
    char answer;

    int low = 1;
    int high = 5;

    printf("Lets play the fruit game");
    printf("\n Spin? ");
    scanf(" %c", &answer);

    srand(time(NULL));
    fruitN1 = rand() % (high - low + 1) + low;
    fruitN2 = rand() % (high - low + 1) + low;
    fruitN3 = rand() % (high - low + 1) + low;

    printf("%d,%d,%d", fruitN1, fruitN2, fruitN3);

    /*
    fruitN1 = 5;
    fruitN2 = 3;
    fruitN3 = 5;
    */

    while (answer == 'y')
    {
        if (fruitN1 <= 4 && fruitN2 <= 4 && fruitN3 <= 4 && fruitN1 ==
fruitN2 && fruitN2 == fruitN3)
        {
            printf("\nWow you get 20 points! ");
        }

        else if (fruitN1 == 5 && fruitN2 == 5 && fruitN3 == 5)
        {
            printf("\nYay jackpot! you get 2000 points!");
        }
        else if (fruitN1 == 5 && fruitN2 == 5 || fruitN1 == 5 && fruitN3 == 5 ||
fruitN2 == 5 && fruitN3 == 5)
        {
            printf("\n Nice! You get 100 points");
        }
        else
    }
```

WORKSHEET 4

GRADEMARK REPORT

FINAL GRADE

/20

GENERAL COMMENTS

Worksheet 4:

Coding:

It would have been better to use an array for the random number which would have meant you could have improved code efficiency throughout, and you'd also have the option of using loops - particularly useful for counting 5s rather than long if statements. Not entirely efficient, but a good effort nonetheless.

7/10

Testing:

Testing is OK, what happens if you enter something other than "Y" or "N"? You might want to validate this so that the user is forced to choose their required option accurately.

9/10

Total: 16/20

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W 5

by Serena Jonathan

Submission date: 10-Jan-2024 03:00PM (UTC+0000)

Submission ID: 221381923

File name: 50568_Serena_Jonathan_W_5_541134_818911105.docx (140.61K)

Word count: 188

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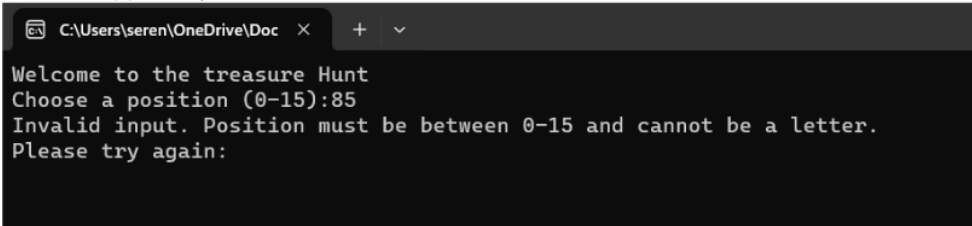
WORKSHEET 5 – TESTING (Treasure Hunt)

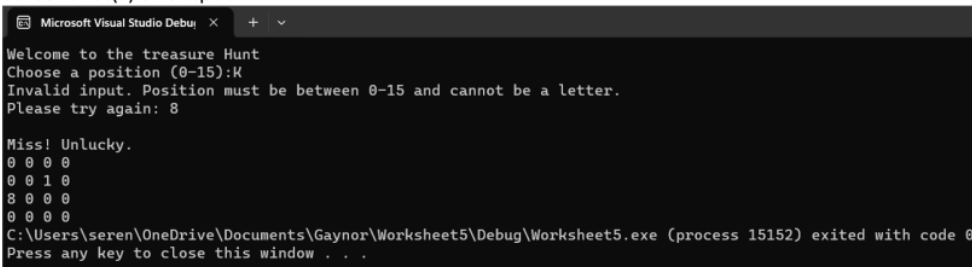
For this worksheet, there are several possible approaches to the problem.

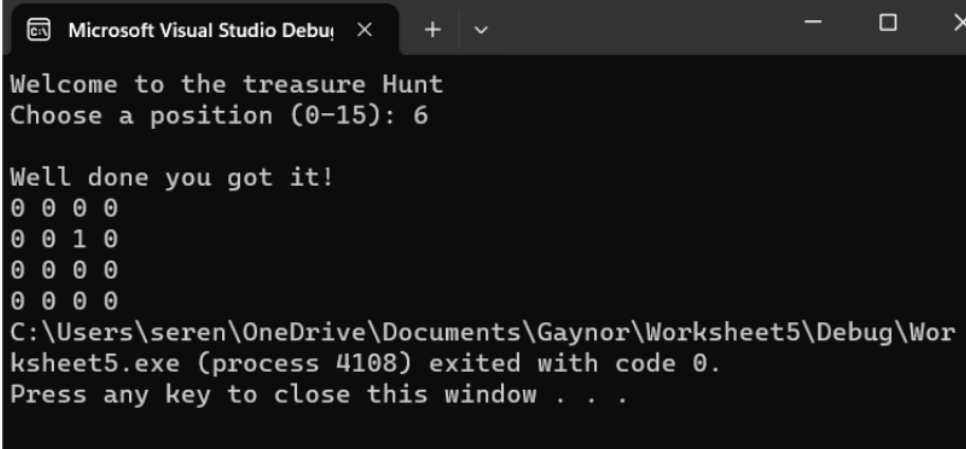
Create your own test set to show the strengths and/or limitations of your solution. Use as many of the boxes below as you need.

Test:
Does the Treasure Hunt game work when user selects a position between 0-15?
Screenshot(s) of output:
Result: Did the programme behave as expected ie syntactically and logically correct? YES If NO, what went wrong?

Test:
User enters invalid number like -5
Screenshot(s) of output:
Result: Did the programme behave as expected ie syntactically and logically correct? YES If NO, what went wrong?

Test:
User enters invalid number like 85
Screenshot(s) of output:
 <pre> C:\Users\seren\OneDrive\Doc X + v Welcome to the treasure Hunt Choose a position (0-15):85 Invalid input. Position must be between 0-15 and cannot be a letter. Please try again: </pre>
Result: Did the programme behave as expected ie syntactically and logically correct?
YES
If NO, what went wrong?

Test:
User enters invalid input like a letter.
Screenshot(s) of output:
 <pre> Microsoft Visual Studio Debu X + v Welcome to the treasure Hunt Choose a position (0-15):K Invalid input. Position must be between 0-15 and cannot be a letter. Please try again: 8 Miss! Unlucky. 0 0 0 0 0 0 1 0 8 0 0 0 0 0 0 0 C:\Users\seren\OneDrive\Documents\Gaynor\Worksheet5\Debug\Worksheet5.exe (process 15152) exited with code 0 Press any key to close this window . . . </pre>
Result: Did the programme behave as expected ie syntactically and logically correct?
YES
If NO, what went wrong?

Test:
User guesses winning position
Screenshot(s) of output:

Result: Did the programme behave as expected ie syntactically and logically correct?
YES
If NO, what went wrong?

Final code:

```
HEADER FILE
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

#pragma once

void randomArray(int theBoard[16], int size)
{
    srand(time(NULL));

    for (int i = size - 1; i > 0; i--)
    {
        int j = rand() % (i + 1);
        int temp = theBoard[i];
        theBoard[i] = theBoard[j];
        theBoard[j] = temp;
    }
}

void printboard()
{
    for (i = 0; i < 4; i++)
    {
        printf("%d ", theBoard[i]);
    }
    printf("\n");

    for (i = 4; i < 8; i++)
    {
        printf("%d ", theBoard[i]);
    }
    printf("\n");

    for (i = 8; i < 12; i++)
    {
        printf("%d ", theBoard[i]);
    }
    printf("\n");

    for (i = 12; i < 16; i++)
    {
        printf("%d ", theBoard[i]);
    }
}
```

[Copy and paste your code here – note, do not use a screenshot]

```
#define _CRT_SECURE_NO_WARNINGS

#include <stdio.h>
#include <math.h>
#include <time.h>
#include <stdlib.h>

int theBoard[16] = { 0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0 };

int i;

#include "Header.h"

void main()
{
    int size = sizeof(theBoard) / sizeof(theBoard[0]);
    randomArray(theBoard, size);

    int position;

    printf("Welcome to the treasure Hunt\n");

    printf("Choose a position (0-15):");
    scanf("%d", &position);

    while (position <= 0 || position > 15)
    {
        printf("Invalid input. Position must be between 0-15 and cannot be a letter.");
        printf("\nPlease try again: ");
        while (getchar() != '\n');
        scanf("%d", &position);
    }

    if (theBoard[position] == 1)
    {
        printf("\nWell done you got it!\n");
    }

    else if (theBoard[position] != 1)
    {
        printf("\nMiss! Unlucky.\n");
        theBoard[position] = 8;
    }

    printboard();
}
```

FINAL GRADE

/30

GENERAL COMMENTS

Worksheet 5:**Coding:**

You've got a similar solution to your sister in the function section, there is nothing wrong with discussing the work, but make sure that you are working independently, so that you don't risk collusion (this is a form of unfair practice). I'm not concerned here as other parts of the program are different, but bear it in mind for future assignments.

Some good coding features shown, but I can only have one go which makes it a bit of a difficult game! A while loop in the main() function would have solved this.

8/15

Testing:

What you've shown is good, but the lack of multiple turns means you're limited in what you can show.

7/15

Total: 15/30**Organisation of report, writing style, presentation of work:**

It was a bit hard to find your code at times as it had gone off the bottom of the text box - make sure all of your work is displayed so that the marker doesn't miss anything. Otherwise good layout and writing style.

Overall total for assignment: 72.5%

Test mark: 78%

Overall mark for module: 74%

You've progressed a lot during the course of this module, keep practising between now and Year 2 to maintain/improve your skills. Some good work shown in this assignment :)

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