

# CS 105 Assessment 1

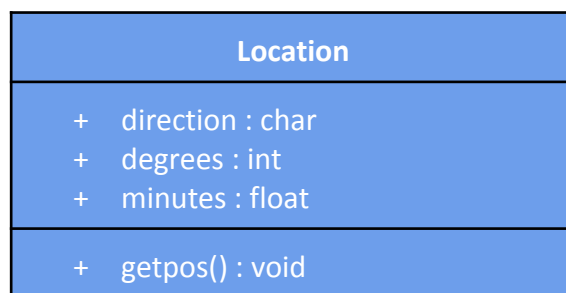
Declan McGeorge

## Scenario 1

### Task 1:

See cpp files.

### Task 2:



*fig 1: Location UML Class Diagram*

### Task 3:

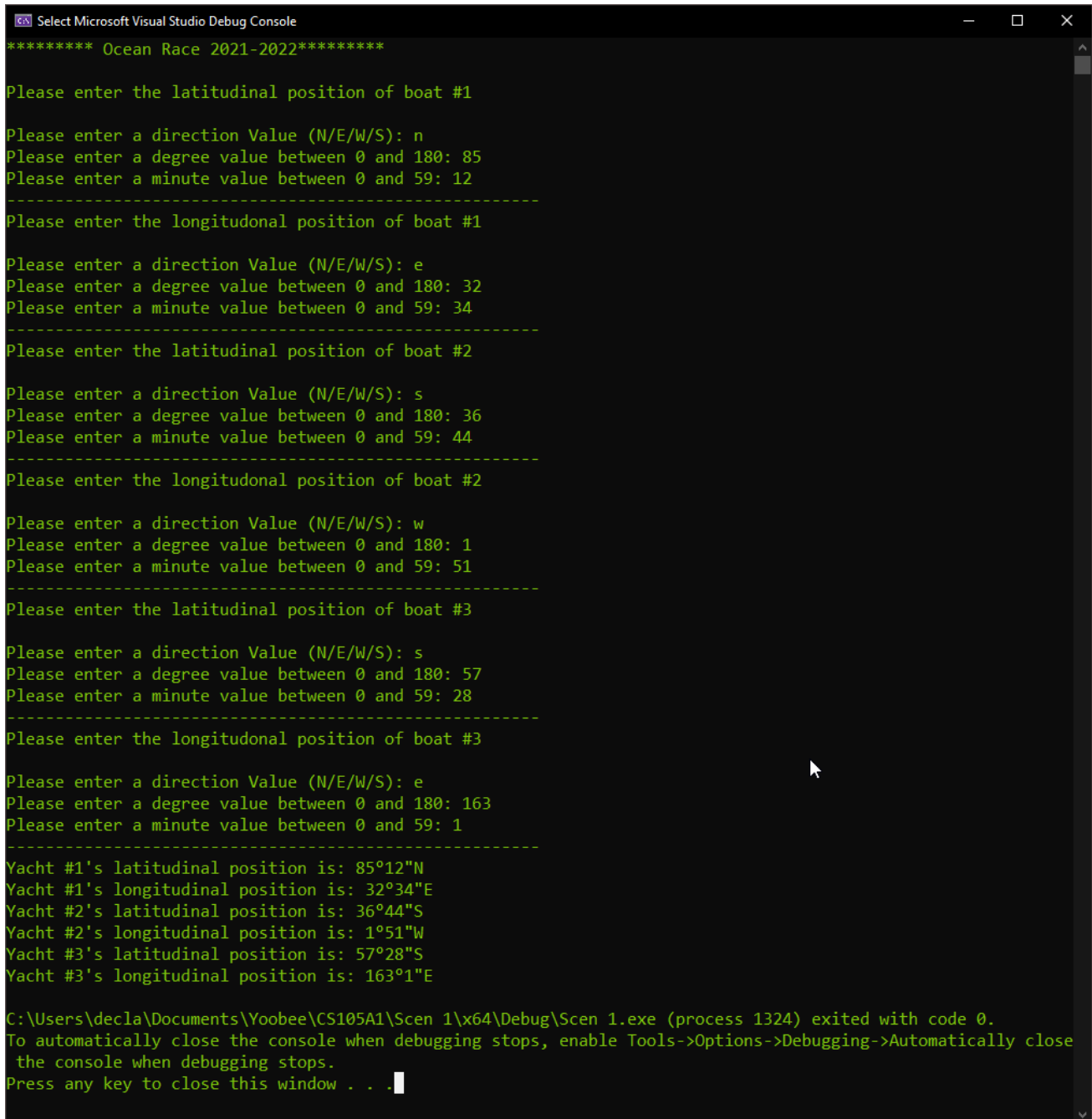
I found the brief to be confusing at points. Most especially the requirement to include a method “getpos” within the Location class, and a method “get\_pos” with both requiring an input from the user to populate the data in the objects. I was unsure of how to implement this in the code without it being confusing and inelegant, so I didn’t.

I created the Yacht class with an attribute for serial numbers, and a static attribute for tracking the total number of Yacht objects created. The Yacht constructor increments the object count variable, and then sets the serial number to equal the object count variable.

I created the Location class as a nested class within Yacht. Location contained attributes for direction, degrees, and minutes. Location also contains the getpos method (return void), which prompts the user to provide values for the attributes mentioned, and validates them to ensure they are within an acceptable range.

The Yacht class also has two Location object attributes, latitude and longitude which are populated using the getpos function. Yacht has one method called display (return void) which outputs an individual Yacht object’s serial number, and its latitudinal and longitudinal values.

## Output Screen Shots:



```
***** Ocean Race 2021-2022*****

Please enter the latitudinal position of boat #1

Please enter a direction Value (N/E/W/S): n
Please enter a degree value between 0 and 180: 85
Please enter a minute value between 0 and 59: 12
-----
Please enter the longitudinal position of boat #1

Please enter a direction Value (N/E/W/S): e
Please enter a degree value between 0 and 180: 32
Please enter a minute value between 0 and 59: 34
-----
Please enter the latitudinal position of boat #2

Please enter a direction Value (N/E/W/S): s
Please enter a degree value between 0 and 180: 36
Please enter a minute value between 0 and 59: 44
-----
Please enter the longitudinal position of boat #2

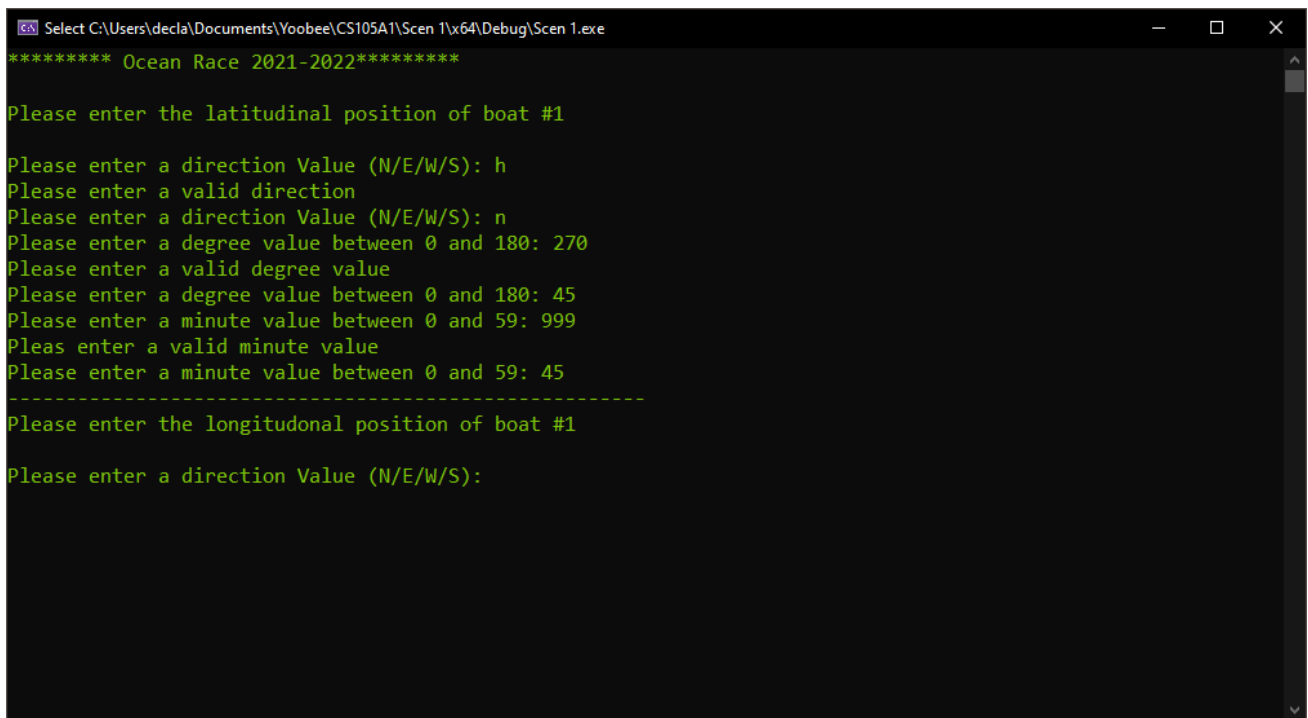
Please enter a direction Value (N/E/W/S): w
Please enter a degree value between 0 and 180: 1
Please enter a minute value between 0 and 59: 51
-----
Please enter the latitudinal position of boat #3

Please enter a direction Value (N/E/W/S): s
Please enter a degree value between 0 and 180: 57
Please enter a minute value between 0 and 59: 28
-----
Please enter the longitudinal position of boat #3

Please enter a direction Value (N/E/W/S): e
Please enter a degree value between 0 and 180: 163
Please enter a minute value between 0 and 59: 1
-----
Yacht #1's latitudinal position is: 85°12"N
Yacht #1's longitudinal position is: 32°34"E
Yacht #2's latitudinal position is: 36°44"S
Yacht #2's longitudinal position is: 1°51"W
Yacht #3's latitudinal position is: 57°28"S
Yacht #3's longitudinal position is: 163°1"E

C:\Users\decla\Documents\Yoobee\CS105A1\Scen 1\x64\Debug\Scen 1.exe (process 1324) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close
the console when debugging stops.
Press any key to close this window . . .
```

fig 2: data successfully input and displayed



```
Select C:\Users\decla\Documents\Yoobee\CS105A1\Scen 1\64\Debug\Scen 1.exe
***** Ocean Race 2021-2022*****

Please enter the latitudinal position of boat #1

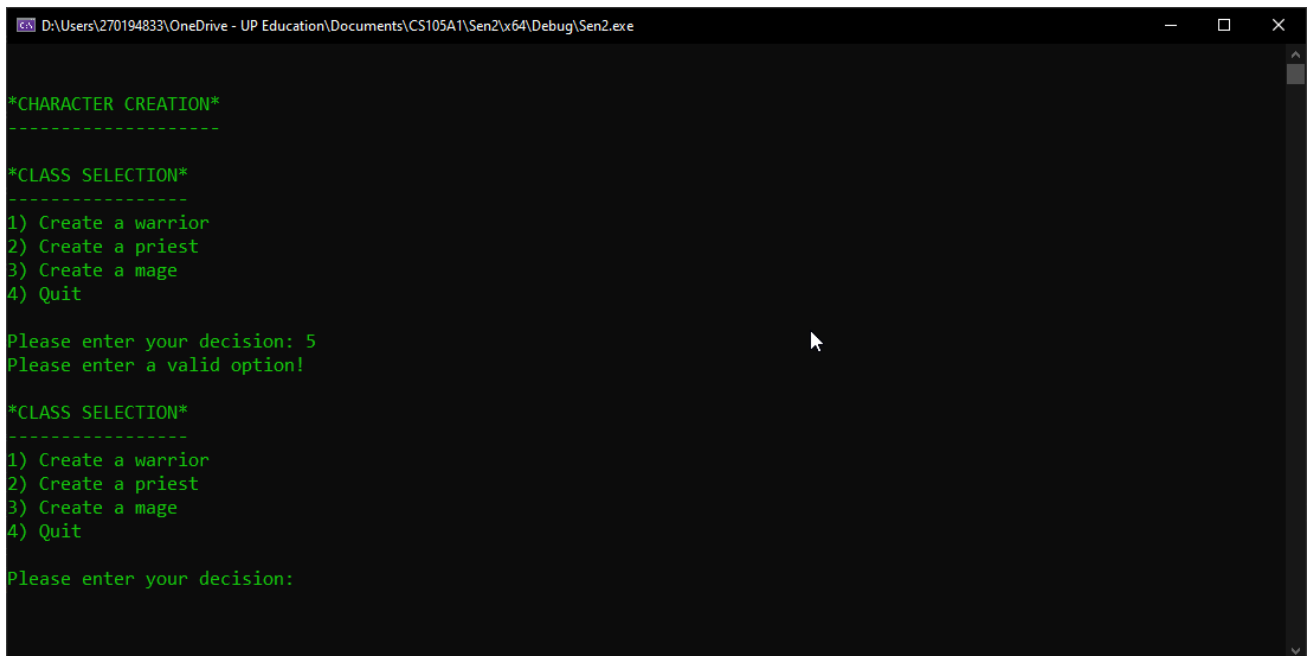
Please enter a direction Value (N/E/W/S): h
Please enter a valid direction
Please enter a direction Value (N/E/W/S): n
Please enter a degree value between 0 and 180: 270
Please enter a valid degree value
Please enter a degree value between 0 and 180: 45
Please enter a minute value between 0 and 59: 999
Please enter a valid minute value
Please enter a minute value between 0 and 59: 45
-----
Please enter the longitudinal position of boat #1

Please enter a direction Value (N/E/W/S):
```

*fig 3: validating bad data inputs*

## Scenario 2:

### Output Screenshots:



```

D:\Users\270194833\OneDrive - UP Education\Documents\CS105A1\Sen2\64\Debug\Sen2.exe

*CHARACTER CREATION*
-----

*CLASS SELECTION*
-----
1) Create a warrior
2) Create a priest
3) Create a mage
4) Quit

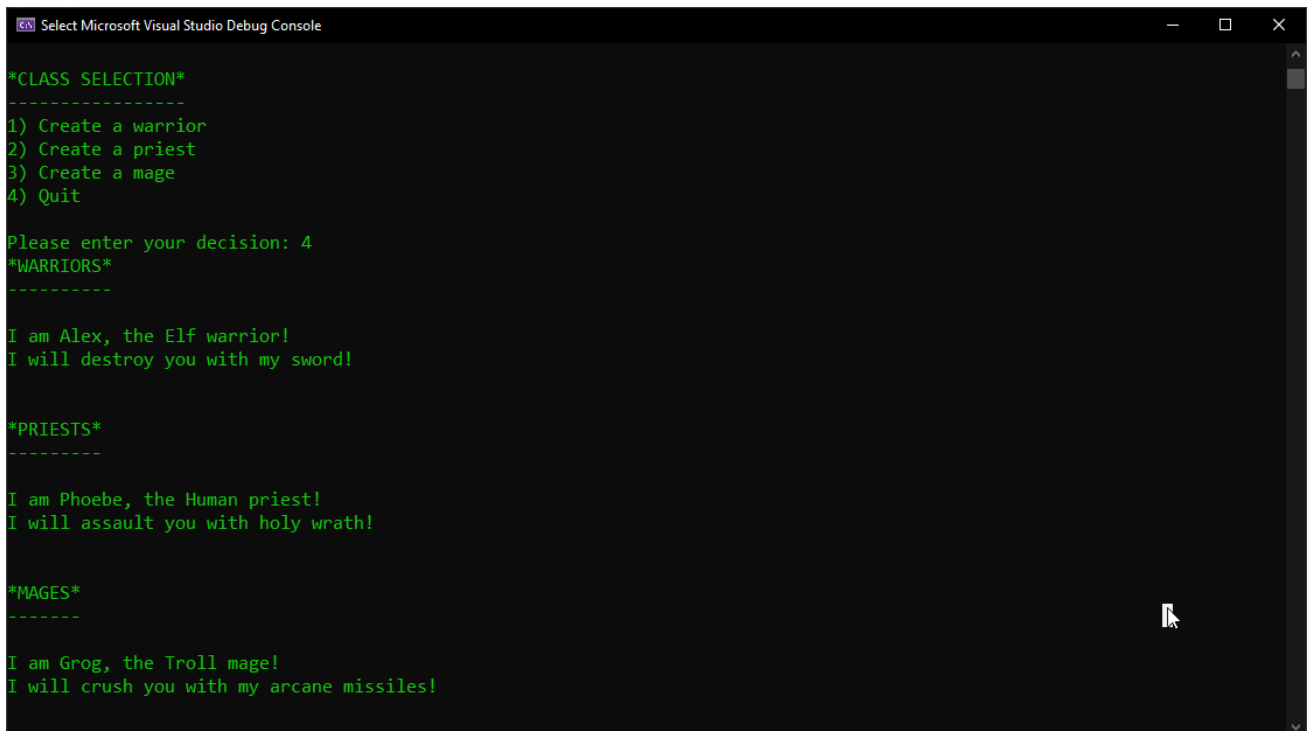
Please enter your decision: 5
Please enter a valid option!

*CLASS SELECTION*
-----
1) Create a warrior
2) Create a priest
3) Create a mage
4) Quit

Please enter your decision:

```

fig 4: validating bad data inputs



```

Select Microsoft Visual Studio Debug Console

*CLASS SELECTION*
-----
1) Create a warrior
2) Create a priest
3) Create a mage
4) Quit

Please enter your decision: 4
*WARRIORS*
-----

I am Alex, the Elf warrior!
I will destroy you with my sword!

*PRIESTS*
-----

I am Phoebe, the Human priest!
I will assault you with holy wrath!

*MAGES*
-----

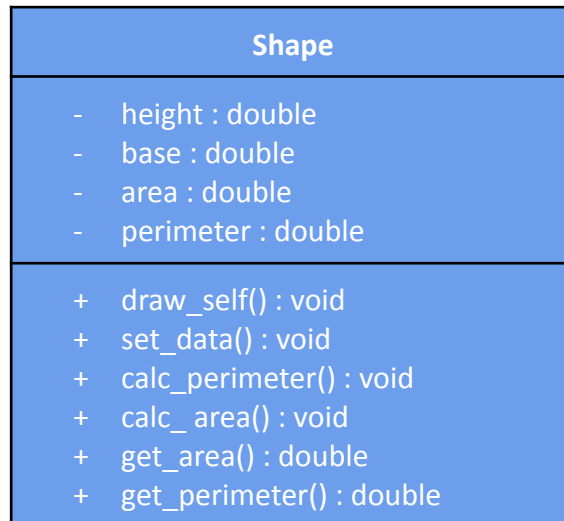
I am Grog, the Troll mage!
I will crush you with my arcane missiles!

```

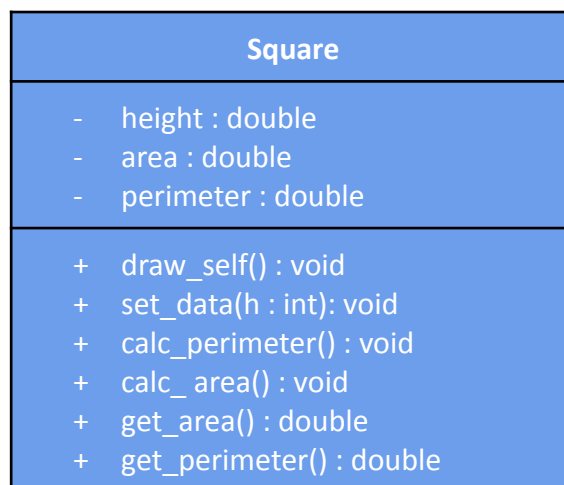
fig 5: successful output

## Scenario 3:

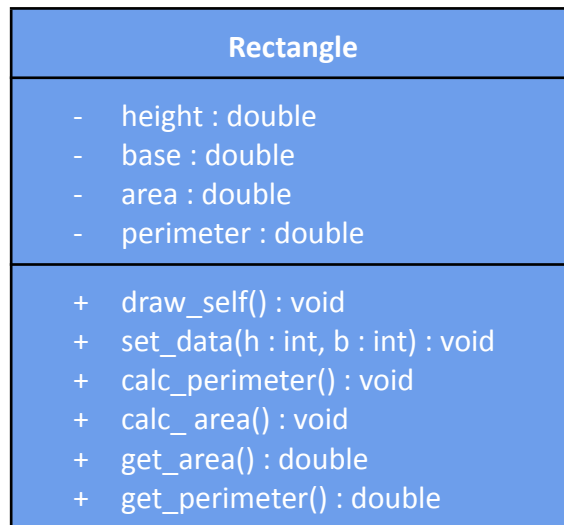
### UML Diagrams:



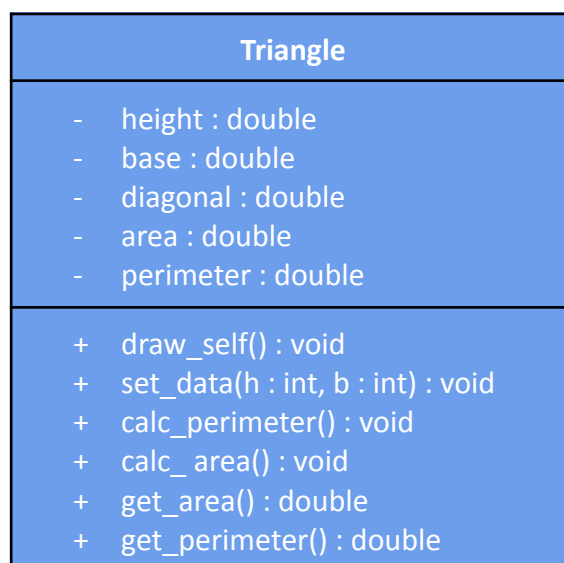
*fig 6: Shape UML Class Diagram*



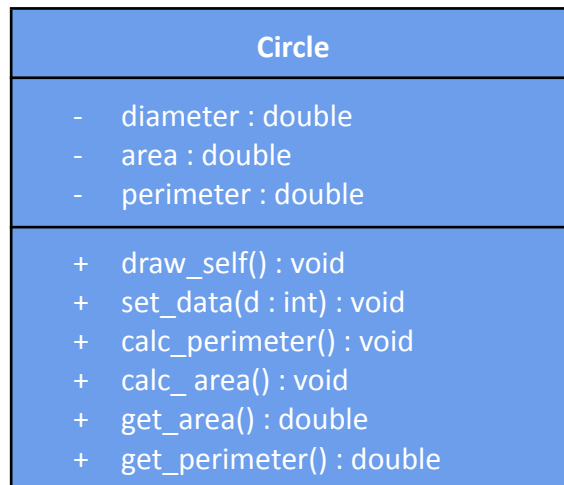
*fig 7: Square UML Class Diagram*



*fig 8: Rectangle UML Class Diagram*



*fig 9: Triangle UML Class Diagram*



*fig 10: Circle UML Class Diagram*

Shape is the parent class, and all other classes are derived from it. I was unable to insert an arrow connecting them in google docs.

## Output Screenshots:

```
Select C:\Users\decla\Documents\Voobee\CS105A1\Scen 3\64\Debug\Scen 3.exe

  * * *
 * * * * *
* * * * *
* * * * *
* * * * *
 * * * * *
  * * *

*****
Circle Calculator
*****

1) Calculate Perimeter
2) Calculate Area
3) Return to main menu

Please enter your choice: 2
Please enter the diameter of the circle in cm: 5
The area of the circle is 19.6349 square cm

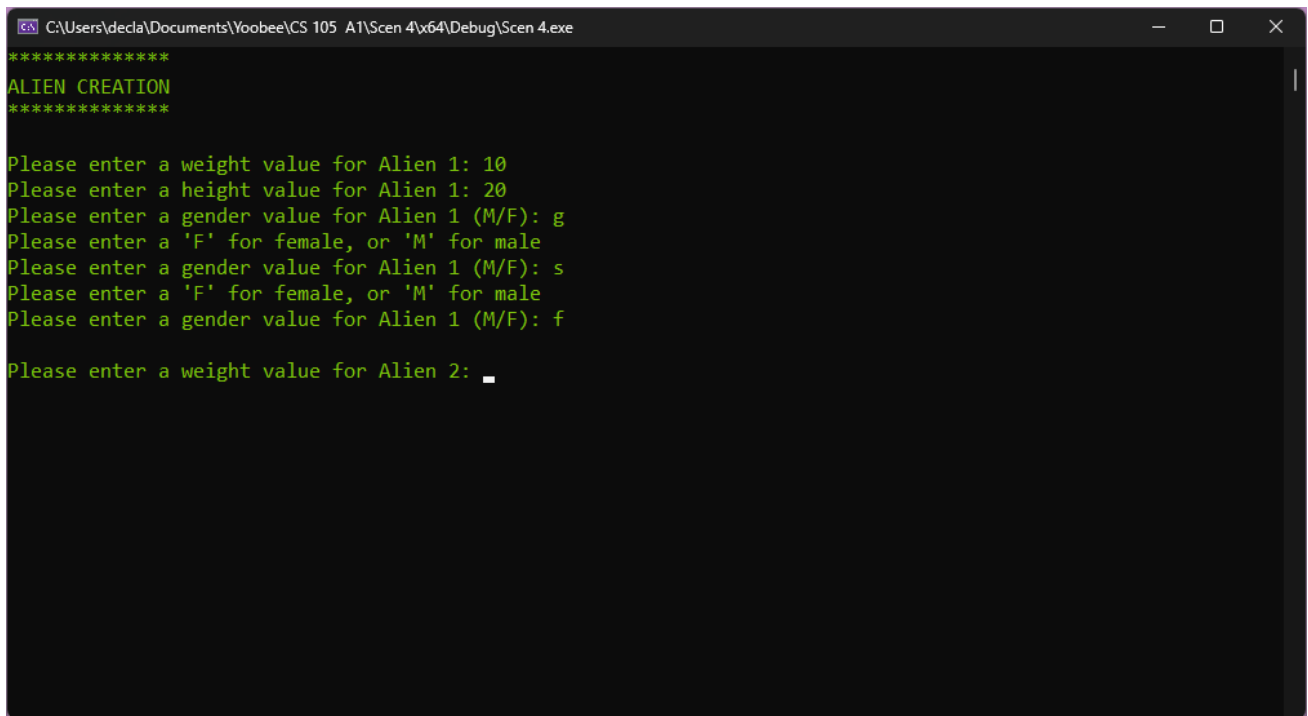
  * * *
 * * * * *
* * * * *
* * * * *
* * * * *
```

*fig 11: successful output*



## Scenario 4:

### Output Screenshots:

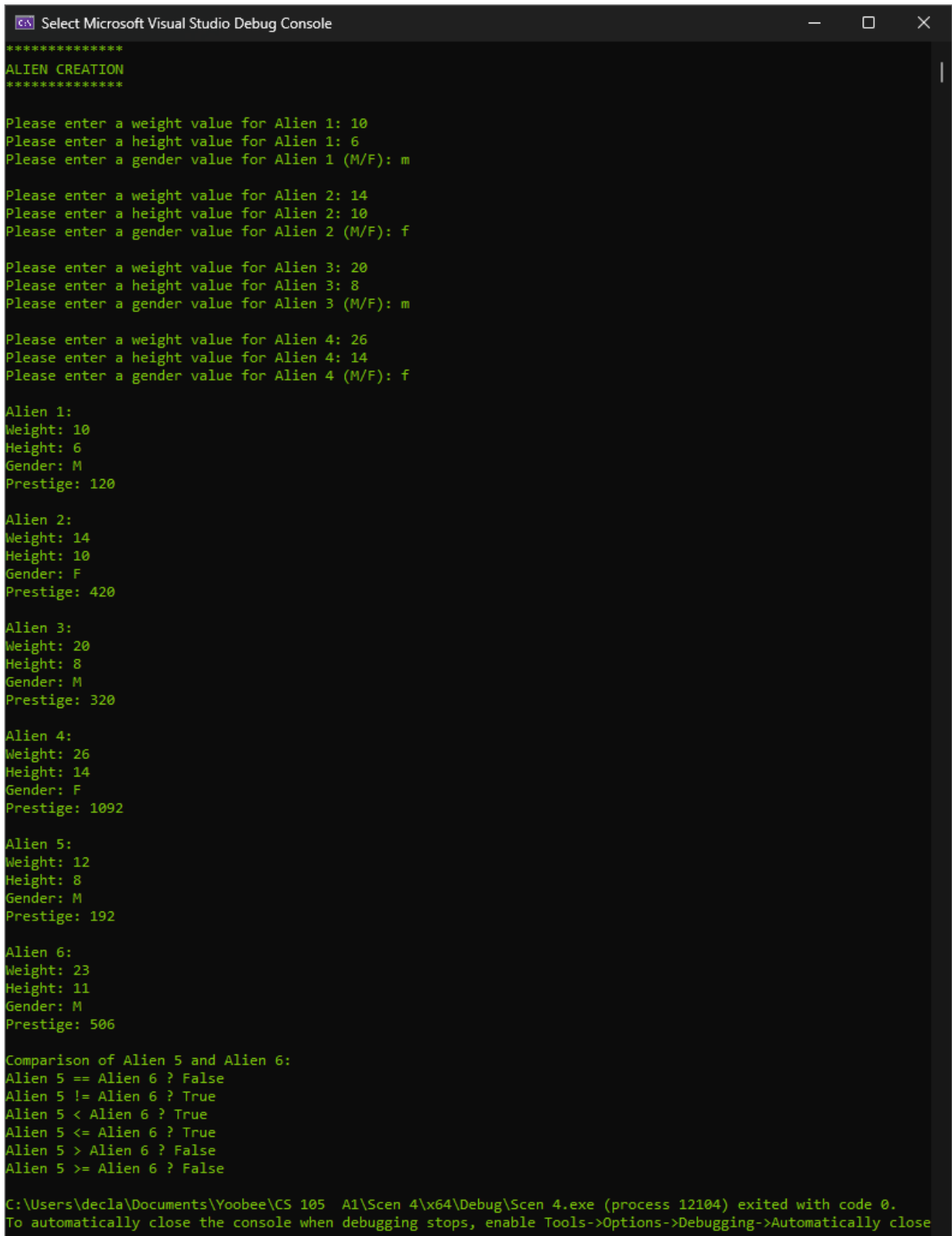


```
C:\Users\decla\Documents\Yoobee\CS 105 A1\Scen 4\Debug\Scen 4.exe
*****
ALIEN CREATION
*****

Please enter a weight value for Alien 1: 10
Please enter a height value for Alien 1: 20
Please enter a gender value for Alien 1 (M/F): g
Please enter a 'F' for female, or 'M' for male
Please enter a gender value for Alien 1 (M/F): s
Please enter a 'F' for female, or 'M' for male
Please enter a gender value for Alien 1 (M/F): f

Please enter a weight value for Alien 2: _
```

Fig 12: wrong input



```
*****
ALIEN CREATION
*****

Please enter a weight value for Alien 1: 10
Please enter a height value for Alien 1: 6
Please enter a gender value for Alien 1 (M/F): m

Please enter a weight value for Alien 2: 14
Please enter a height value for Alien 2: 10
Please enter a gender value for Alien 2 (M/F): f

Please enter a weight value for Alien 3: 20
Please enter a height value for Alien 3: 8
Please enter a gender value for Alien 3 (M/F): m

Please enter a weight value for Alien 4: 26
Please enter a height value for Alien 4: 14
Please enter a gender value for Alien 4 (M/F): f

Alien 1:
Weight: 10
Height: 6
Gender: M
Prestige: 120

Alien 2:
Weight: 14
Height: 10
Gender: F
Prestige: 420

Alien 3:
Weight: 20
Height: 8
Gender: M
Prestige: 320

Alien 4:
Weight: 26
Height: 14
Gender: F
Prestige: 1092

Alien 5:
Weight: 12
Height: 8
Gender: M
Prestige: 192

Alien 6:
Weight: 23
Height: 11
Gender: M
Prestige: 506

Comparison of Alien 5 and Alien 6:
Alien 5 == Alien 6 ? False
Alien 5 != Alien 6 ? True
Alien 5 < Alien 6 ? True
Alien 5 <= Alien 6 ? True
Alien 5 > Alien 6 ? False
Alien 5 >= Alien 6 ? False

C:\Users\decla\Documents\Yoobee\CS 105 A1\Scen 4\x64\Debug\Scen 4.exe (process 12104) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close
```

fig 13: successful output