CS 105 Assessment 1

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Scenario 1

Task 1:

See cpp files.

Task 2:

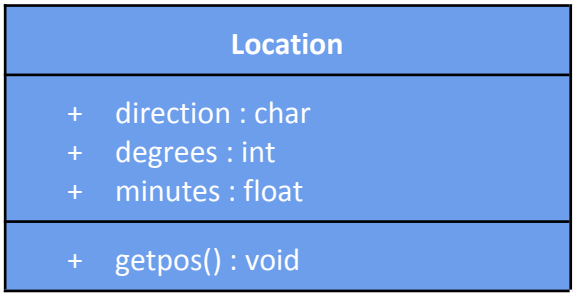

fig 1: Location UML Class Diagram

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:

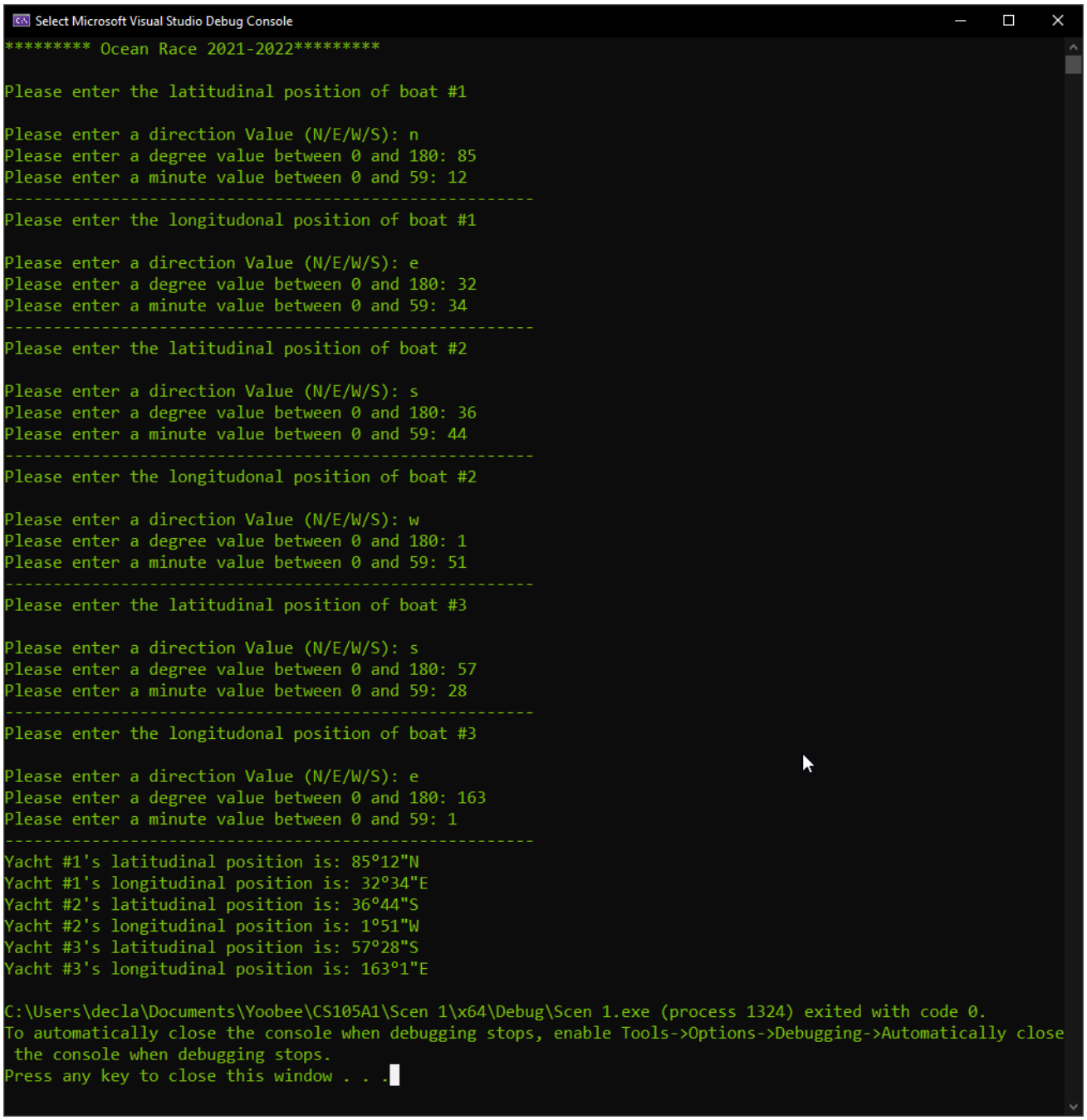

fig 2: data successfully input and displayed

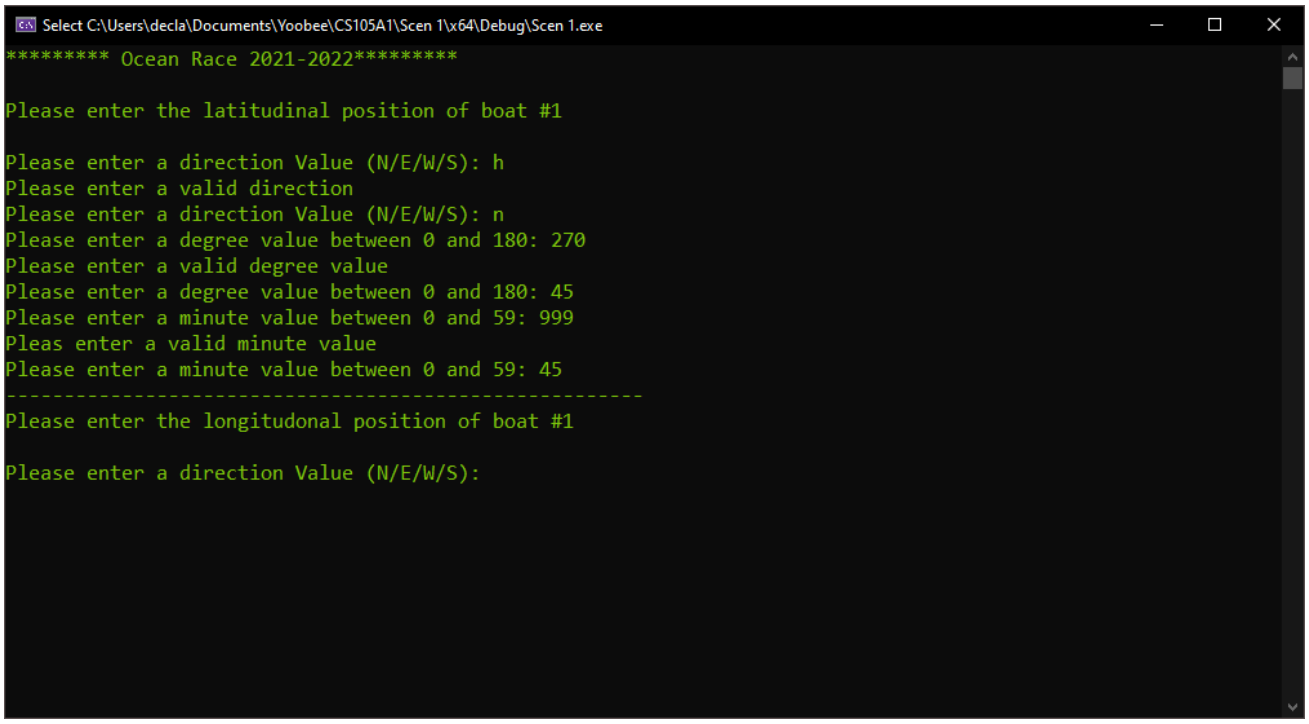

fig 3: validating bad data inputs

Scenario 2:

Output Screenshots:

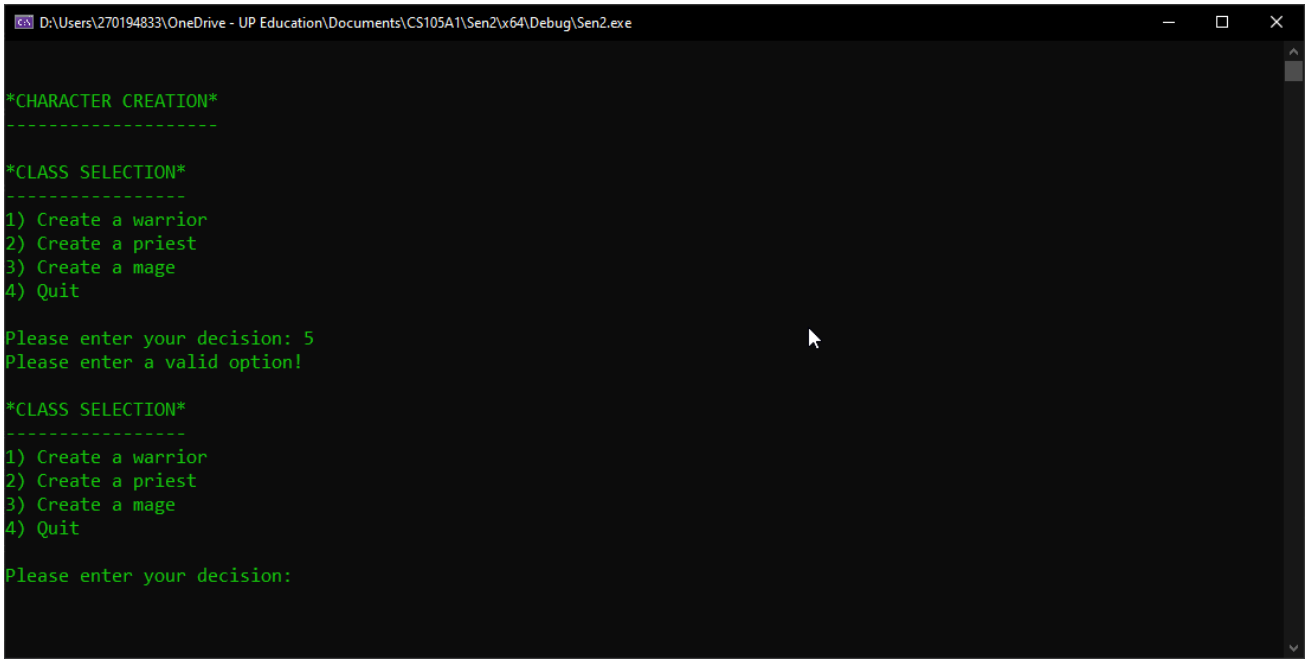

fig 4: validating bad data inputs

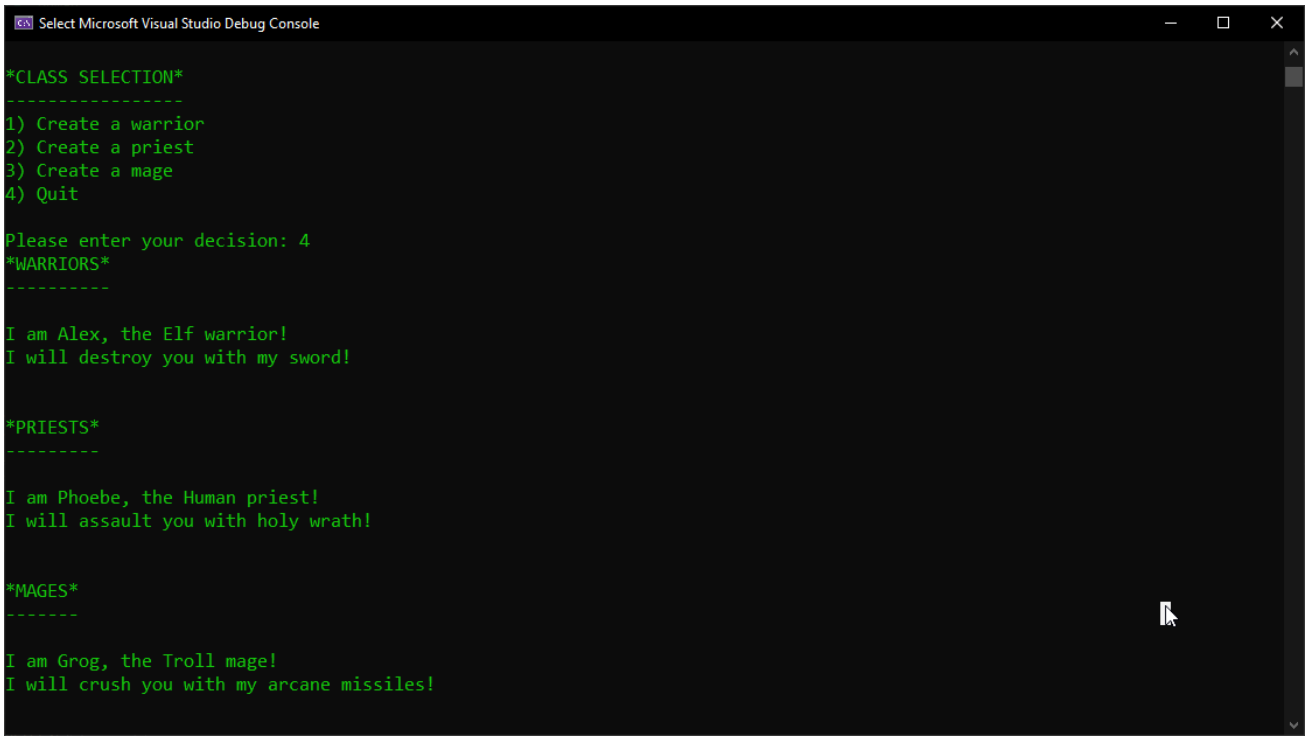

fig 5: successful output

Scenario 3:

UML Diagrams:

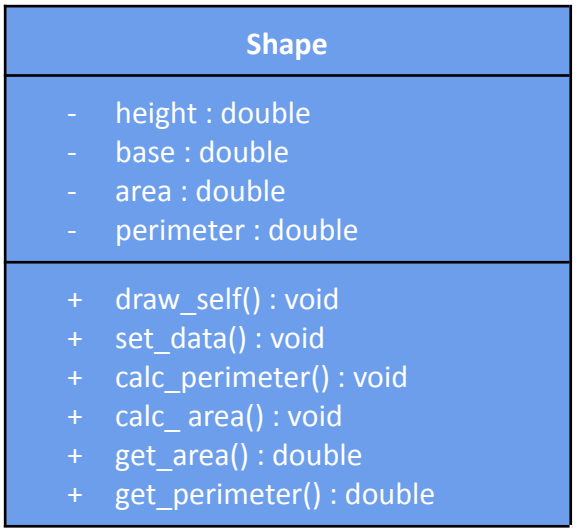

fig 6: Shape UML Class Diagram

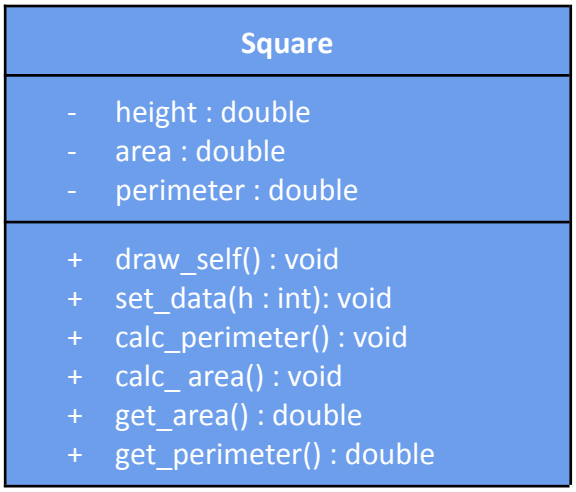

fig 7: Square UML Class Diagram

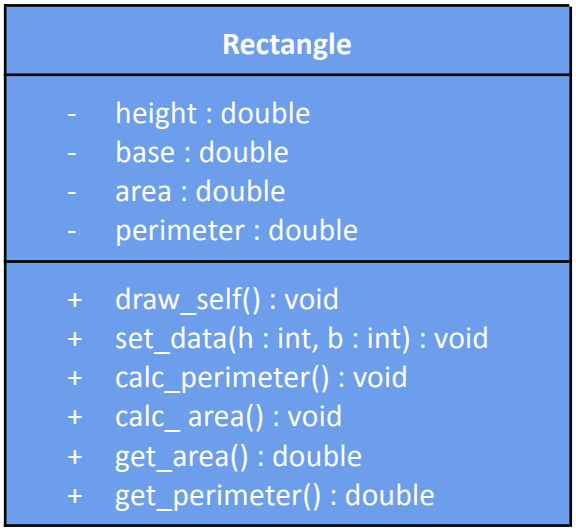

fig 8: Rectangle UML Class Diagram

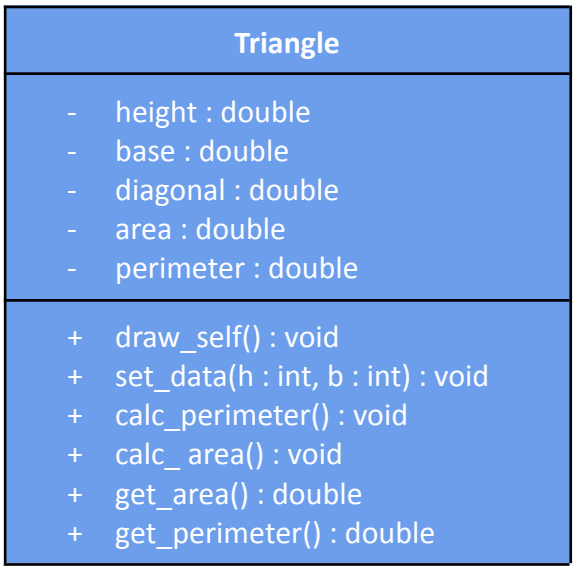

fig 9: Triangle UML Class Diagram

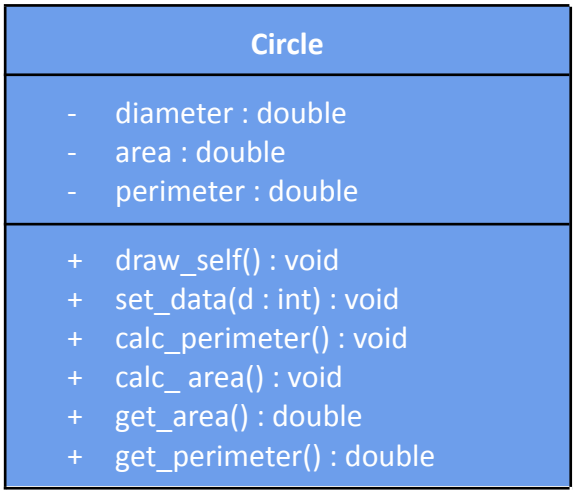

fig 10: Circle UML Class Diagram

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:

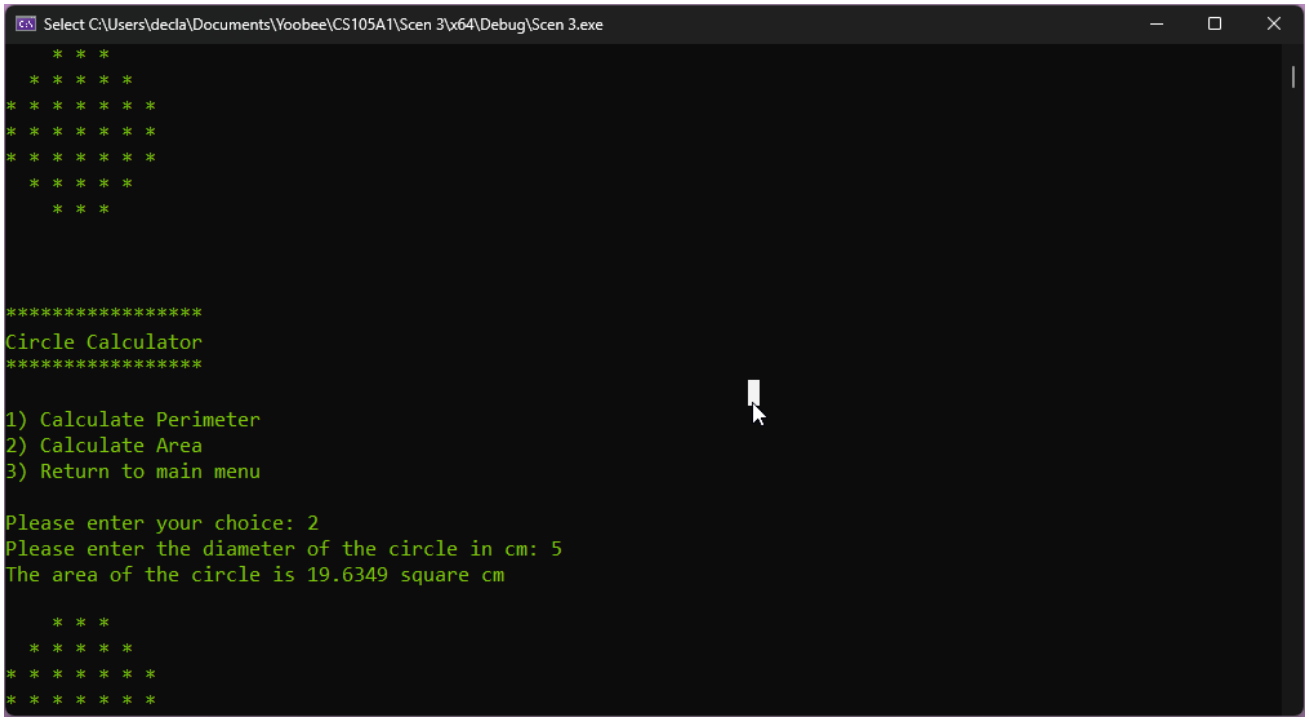

fig 11: successful output

Scenario 4:

Output Screenshots:

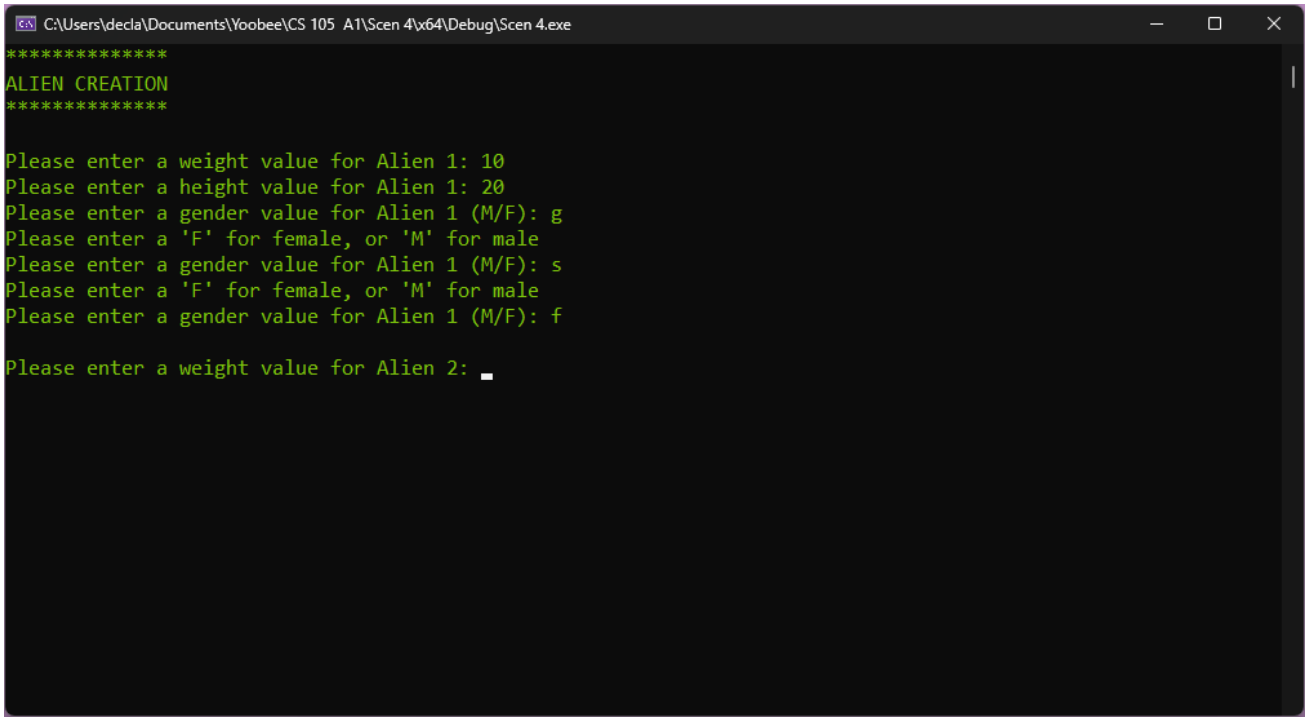

Fig 12: wrong input

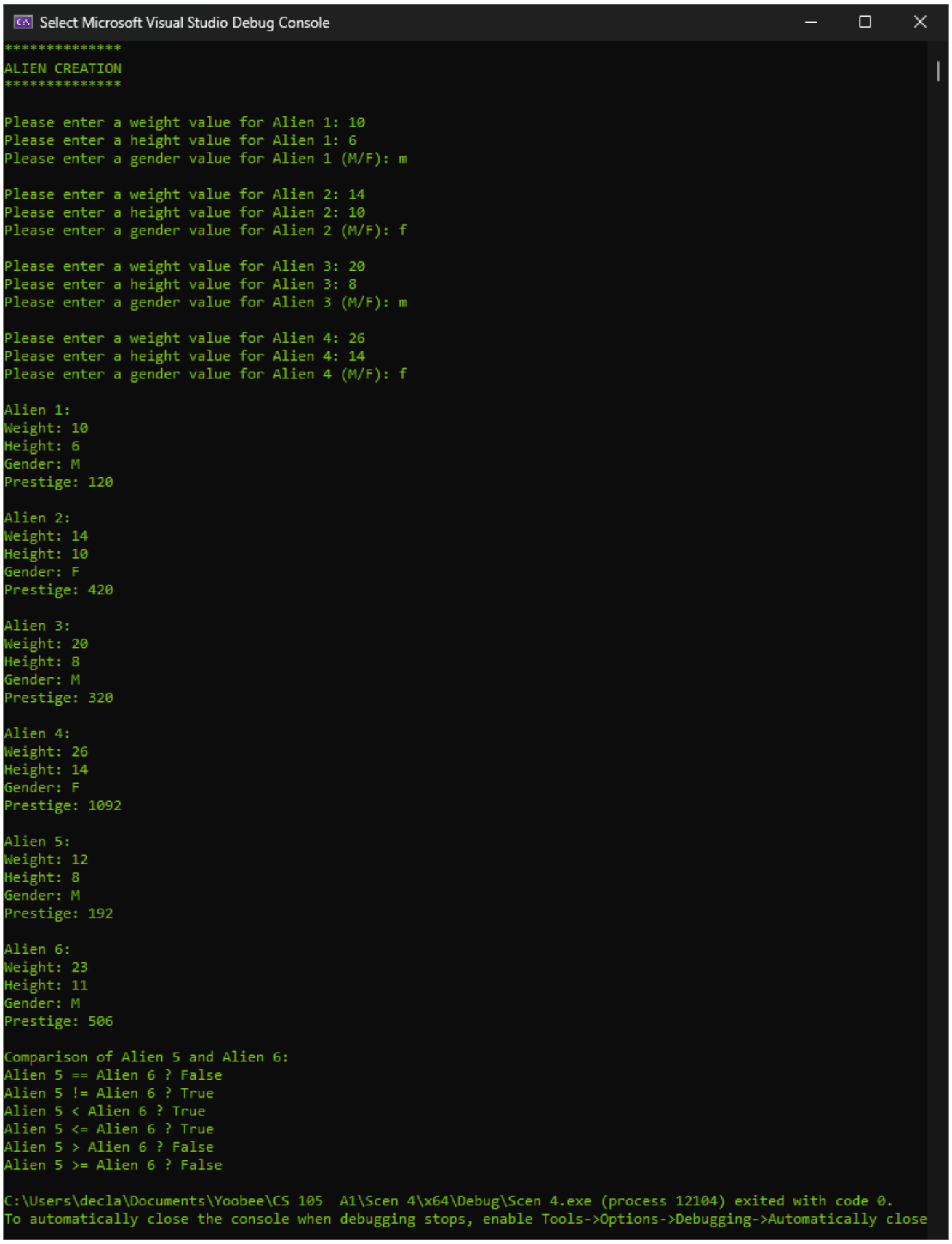

fig 13: successful output