**COMP101 – Assignment 01**

**Python Code –**

#201358937 Tonge\_Brandon-CA01.py

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#This program accepts the users inputs regarding the specification of a barge

#and then uses these inputs to calculate the draft of said barge. This

#calculation is made assuming the barge is constructed using iron. The

#program will then output each of the calculated values for the user.

print("This program will calculate the draft of an iron barge using the \ninputed user values.")

print()

#User inputs

length = float(input("Please enter the length of the barge in metres: "))

height = float(input("Please enter the height of the barge in metres: "))

breadth = float(input("Please enter the breadth of the barge in metres: "))

#Set the value for the weight of iron

weight\_of\_iron = 1.06

#Calculations for the draft

area\_of\_barge = (2\*height)\*(length+breadth)+(length\*breadth)

mass\_of\_barge = area\_of\_barge\*weight\_of\_iron

draft\_of\_barge = mass\_of\_barge/(length\*breadth)

#User Outputs

print("The length is: " + str(length) + "m")

print("The height is: " + str(height) + "m")

print("The breadth is: " + str(breadth) + "m")

print("The draft of the barge is: " + str(draft\_of\_barge) + "m")

#Test outputs

#print("The weight of iron is: " + str(weight\_of\_iron) + "kg per square meter")

#print("The area of the barge is: " + str(area\_of\_barge) + " meters squared")

#print("The mass of the barge is: " + str(mass\_of\_barge) + "kg")

**Testing Table –**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Length | Height | Breadth | Expected Output | Actual Output | Comments |
| 4 | 5 | 6 | 5.48 | 5.48 | The expected output matched the actual output. There is no need for any corrections. |
| 10 | 20 | 16 | 7.95 | 7.95 | The expected output matched the actual output. There is no need for any corrections. |
| 17.3 | 10 | 5.5 | 6.14 | The program crashed on the first input. | The expected result did not match the actual result. The program crashed because I was casting the user input to an integer where the user was inputting a value with a decimal place. This was solved by casting the values to floats instead. |
| 17.3 | 10 | 5.5 | 6.14 | 6.14 | The expected output matched the actual output. There is no need for any corrections. |
| 12 | 6 | Seven | 3.94 | The program crashed when I entered the string ‘seven’ as it cannot convert a string to a float. | The expected result did not match the actual result as the program was unable to convert a string to a float. By including exception handling we could have stopped the program from crashing and prompted the user to change their input. |

**Pseudocode –**

OUTPUT “What is the length?”

INPUT user inputs appropriate answer

STORE in variable “Length”

OUTPUT “What is the height?”

INPUT user inputs appropriate answer

STORE in variable “height”

OUTPUT “What is the breadth?”

INPUT user inputs appropriate answer

STORE in variable “breadth”

STORE set value for the weight of iron in “weight of iron” variable

CALCULATE area of the barge using the “length”, “height” and “breadth” variables

STORE area of barge in the “area of barge” variable

CALCULATE mass of the barge using the “area of barge” variable and the “weight of iron” variable

STORE mass of barge in the “mass of barge” variable

CALCULATE draft of barge using the “mass of barge” variable and the “length” and “breadth” variable

STORE draft of barge in the “draft of barge” variable

OUTPUT the “length” variable

OUTPUT the “height” variable

OUTPUT the “breadth” variable

OUTPUT the “draft of barge” variable