

COMP101 – Assignment 01

Python Code –

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#201358937 Tonge_Brandon-CA01.py
#October 2018
#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	5.477	5.476666666666667	The expected output matched the actual output. There is no need for any corrections. I feel like the need to format the number of decimal places regarding the output is not necessary.

10	20	16	7.95	7.95	The expected output matched the actual output. There is no need for any corrections. I feel like the need to format the number of decimal places regarding the output is not necessary.
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	6.139978980557015	The expected output matched the actual output. There is no need for any corrections. I feel like the need to format the number of decimal places regarding the output is not necessary.
12	6	Seven	3.937	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

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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