

**ANL252**

**Python for Data Analytics**

**Tutor-Marked Assignment**

**July 2023 Presentation**

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# Question 1(a):

Coding plagiarism is quite common in the programming industry if you are using the source code from another person without permission from the creator. Programming plagiarism is a serious ethical issue and may have legal consequences (Lee, 2020).

**Why plagiarism happens?**

* The ambiguity of teamwork: being nature of programming work to collaborate the results from a team, the source code is an open source to the member of the group. Hence, anyone from the group may simply claim it and use it in another piece of project (Lee, 2021).
* The abundance of free online resources: for instance, ‘GitHub’. As a code repository platform, the users may access some open-source projects and simply copying the code written by others for their own used (GitHub, n.d.).

**How to avoid:**

* Online plagiarism checker tools: users can use the free online coding checker such as ‘Moss’ to check the similarity and quality of codes written.
* Keep original code and copied code separately: to cite all copied code in the project properly to avoid being accused of plagiarism. Keep a record of owned work Heard, 2019).
* Permission: seeking permission from the creator if using code from open-source platform and provide attribution to the author.

Total word count: 199

# Question 1(b):

```python

# Calculate the ceramic tiles required

# Input the length and width of the renovation area

length = float(input("Enter the length of the renovation area (meter): "))

width = float(input("Enter the width of the renovation area (meter): "))

# Calculate the area of renovation

area = length \* width

# Display the result of nett quantity

print(f"The area of the renovation is {area} square meter.")

# Calculate the wastage of 20%

wastage = (area) \* 0.20

#Display the result of 20% wastage

print(f"The wastage of 20% is: {wastage} square meter")

#Calculate the total requirement (nett quantity + wastage 20%)

total\_quantity = area + wastage

# Display the result of total quantity including labour wastage

print (f"The total renovation area including wastage is: {total\_quantity} square meter")

# Input the length and width of the ceramic tiles

tile\_length = float(input("Enter the tile size - length (meter): "))

tile\_width = float(input("Enter the tile size - width (meter): "))

# Calculate the area of ceramic tile (per piece)

tile\_area = tile\_length \* tile\_width

# Display the result of area of ceramic tile (per piece)

print(f"The area of ceramic tile is {tile\_area} square meter per piece.")

# Calculate the quantity of ceramic tiles (in pieces) based on total renovation area

Total\_quantity\_ceramic = int(total\_quantity / tile\_area)

# Display the total quantity of ceramic tiles (in pieces)

print(f"The total quantity of ceramic tile is {Total\_quantity\_ceramic} pieces.")

# Input the quantity of ceramic tiles per carton

tiles\_carton = float(input("Enter the tiles quantity per carton: "))

# Calculate the quantity of carton required

tiles\_fullcarton = int(Total\_quantity\_ceramic / tiles\_carton)

# Display the quantity of carton of ceramic tiles

print(f"The quantity of ceramic tile is {tiles\_fullcarton} cartons.")

```

Enter the length of the renovation area (meter): 10

Enter the width of the renovation area (meter): 20

The area of the renovation is 200.0 square meter.

The wastage of 20% is: 40.0 square meter

The total renovation area including wastage is: 240.0 square meter

Enter the tile size - length (meter): 0.6

Enter the tile size - width (meter): 0.6

The area of ceramic tile is 0.36 square meter per piece.

The total quantity of ceramic tile is 666 pieces.

Enter the tiles quantity per carton: 4

The quantity of ceramic tile is 166 cartons.

```python

Total lines: 17

## Explanation of code

The purpose of writing this code is to facilitate the sales personnel in a tiles showroom to calculate the exact quantity of ceramic tiles required in a renovation project without calculation mistake. To standardize the calculation, the unit of measurement is in ‘meter’. It means that all input of measurement must be converted to ‘meter’.

Firstly, the sales personnel enter the length and width of the renovation area as provided by customer. The program will automate the total quantity needed including the standard industry labour wastage of 20%.

Next, the sales personnel are required to enter the tiles size based on customer’s selection. Generally, ceramic tiles are available in different sizes such as 0.3m x 0.3m, 0.6m x 0.6m,

0.8m x 0.8m etc. The program will automate the total pieces required by dividing the total area with tiles size.

In last step, by simply key in the quantity per carton, the program will automate the quantity in a complete box. This will minimise damages during transportation.

Overall, by simply enter the 5 pieces of required information, the program will automate the correct quantity in short time. Importantly, all input and output information are display clearly for checking.

Total word count: 200.

# Question 1(c):

```python

# Calculate the ceramic tiles required

# Input the length and width of the renovation area

length = float(input("Enter the length of the renovation area (meter): "))

width = float(input("Enter the width of the renovation area (meter): "))

# Calculate the area of renovation

area = length \* width

# Display the result of nett quantity

print(f"The area of the renovation is {area} square meter.")

# Calculate the expected wastage

expected = float(input("Enter the expected wastage(%): "))

wastage = (area) \* (expected/100)

#Display the result of wastage

print(f"The wastage is: {wastage} square meter")

#Calculate the total requirement (nett quantity + wastage)

total\_quantity = area + wastage

# Display the result of total quantity including labour wastage

print (f"The total renovation area including wastage is: {total\_quantity} square meter")

# Input the length and width of the ceramic tiles

tile\_length = float(input("Enter the tile size - length (meter): "))

tile\_width = float(input("Enter the tile size - width (meter): "))

# Calculate the area of ceramic tile (per piece)

tile\_area = tile\_length \* tile\_width

# Display the result of area of ceramic tile (per piece)

print(f"The area of ceramic tile is {tile\_area} square meter per piece.")

# Calculate the quantity of ceramic tiles (in pieces) based on total renovation area

Total\_quantity\_ceramic = int(total\_quantity / tile\_area)

# Display the total quantity of ceramic tiles (in pieces)

print(f"The total quantity of ceramic tile is {Total\_quantity\_ceramic} pieces.")

# Input the quantity of ceramic tiles per carton

tiles\_carton = float(input("Enter the tiles quantity per carton: "))

# Calculate the quantity of carton required

tiles\_fullcarton = int(Total\_quantity\_ceramic / tiles\_carton)

# Display the quantity of carton of ceramic tiles

print(f"The quantity of ceramic tile is {tiles\_fullcarton} cartons.")

# Calculate total quantity of carton in square foot

SF = float(tiles\_carton\*tiles\_fullcarton\*10.764)

# Display area in square foot

print(f"Total quantity is {SF} square foot.")

# Input price of ceramic tile per SF

Price = float(input("Enter the selling price (per square foot): "))

#Calculate total amount

Total\_amount = float(SF \* Price)

# Display total amount

print(f"Total amount is S${Total\_amount} , excluding GST")

```

Enter the length of the renovation area (meter): 20

Enter the width of the renovation area (meter): 10

The area of the renovation is 200.0 square meter.

Enter the expected wastage(%): 5

The wastage is: 10.0 square meter

The total renovation area including wastage is: 210.0 square meter

Enter the tile size - length (meter): 0.6

Enter the tile size - width (meter): 0.6

The area of ceramic tile is 0.36 square meter per piece.

The total quantity of ceramic tile is 583 pieces.

Enter the tiles quantity per carton: 4

The quantity of ceramic tile is 145 cartons.

Total quantity is 6243.12 square foot.

Enter the selling price (per square foot): 6.50

Total amount is S$40580.28 , excluding GST

```python

## Explanation of rewriting the code to avoid plagiarism

* **Enhance originality of code:**

Allow users to enter the percentage of wastage based on project design. Generally, the wastage of ceramic tiles is subject to the installation pattern. For instance, wastage of 10% is enough for normal installation. However, for a herringbone installation layout, wastage could be as high as 15% (Tile America Inc, n.d.).

In the original codes in 1(b), the wastage of 20% was fixed and therefore may result in excess ordered quantity if actual wastage is less than 20%. With the enhancement to the wastage function, users are free to enter the wastage percentage based on tiles installation method.

* **Enhance the flexibility of code:**

Generally, the measurement in construction floor plan is available in meter. However, most of the prices of ceramic tiles are available in per square foot (Hafary Holdings Limited, n.d.). Hence, there may be confusion or errors in manual calculation due to differences of unit of measurement.

With the enhancement of coding to facilitate the program automate conversion from square meter to square foot, it will avoid the calculation errors due to wrong conversion unit. This will minimise the unnecessary costs such as transportation incurred for additional delivery of tiles or goods return.

* **Enhance the readability of code:**

Firstly, the modification and enhancement to original codes in 1(b) is more useful and capable to produce the expected result. In the enhancement version, the program generates a clearer picture as total costs could be displayed instantly after entering the required data.

Secondly, the codes are simple and easy for the developers to read. Enhancement of codes are cleaner and follow logically. The flows of coding manage to deliver the results progressively based on the standard practice of tiles selection process to improve the quality of codes.

Total word count: 299.

# Question 2:

```python

products= ['laptop','mouse','webcam', 'keyboard', 'speaker']

updated\_items = []

query ='yes'

sub\_total = 0 #initial sub-total amount is 0

# Delivery charges

def delivery\_charges(sub\_total):

if sub\_total >=500:

return 0 #FOC delivery

else:

return 30

# Display the list of products

print(f'Welcome to IT Land!')

print(f'We have a list of products here: {products}.')

while query == 'yes' :

item = input("Hello! What do you want to buy? ")

if item in products:

price\_of\_item = float(input (f"How much is it {item}(in SGD)?: "))

quantity = int(input(f'How many pieces do you want to buy?: '))

cost = float(price\_of\_item\*quantity)

entered\_input = [item, price\_of\_item, quantity, cost]

updated\_items.append(entered\_input)

sub\_total +=cost

final\_total = sub\_total + delivery\_charges(sub\_total)

else:

print(f'Wrong product! Please choose item from our product lists.')

query = input("Would you like to continue? (yes/no)")

print(f'This is our updated shopping list (item, price, quantity): {updated\_items}')

print(f'Sub-total (in SGD): {sub\_total:.2f}')

print(f'Delivery charges (in SGD): {delivery\_charges(sub\_total):.2f}')

print(f'Total amount including delivery charges (in SGD): {final\_total:.2f} ')

```

Welcome to IT Land!

We have a list of products here: ['laptop', 'mouse', 'webcam', 'keyboard', 'speaker'].

Hello! What do you want to buy? mouse

How much is it mouse(in SGD)?: 15.90

How many pieces do you want to buy?: 2

Would you like to continue? (yes/no)yes

Hello! What do you want to buy? webcam

How much is it webcam(in SGD)?: 99.90

How many pieces do you want to buy?: 2

Would you like to continue? (yes/no)yes

Hello! What do you want to buy? key

Wrong product! Please choose item from our product lists.

Would you like to continue? (yes/no)no

This is our updated shopping list (item, price, quantity): [['mouse', 15.9, 2, 31.8], ['webcam', 99.9, 2, 199.8]]

Sub-total (in SGD): 231.60

Delivery charges (in SGD): 30.00

Total amount including delivery charges (in SGD): 261.60

```python

Total lines: 28.

## Enhancement and Explanation

1. Original code does not continue execute further if user wish to purchase second or more items. To eliminate the error, ‘While Loop’ was used in the enhancement version. It improved the reliability of codes in producing the expected results. Hence, user can continue to add more items.
2. Original code does not allow user to enter the quantity. To overcome the issue, a new code was added to allow the quantity input. It is more readable and functional since quantity is a must have condition in a sales programming software.
3. Original code does not display the total amount of items ordered and total costs of all the items ordered. To better display the ordering results, new code defining the individual item total amount, sub-total amount of all items ordered, are added. It improved the originality of the codes and presenting the results in a more logical flow.
4. The additional code to automate the delivery charges has been created to improve the overall quality of the codes. The dispute between seller and buyer due to error in delivery fee charged can be avoidable. Final results are more reliable and consistent.

Total word count: 195.

# References

GitHub, Inc. (2023). *GitHub: Let’s build from here – GitHub.* Retrieved from https://github.com/

Hafary Holdings Limited. (n.d.). *Promotions Price Lists.* Retrieved from: <https://www.hafary.com.sg/promotions>

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Tile America Inc. (n.d.). *CALCULATING SQUARE FOOTAGE.* Retrieved from: <https://www.tileamerica.com/resources/calculating-square-footage#:~:text=For%20most%20standard%20installations%2C%2010,lots%20of%20jogs%20and%20corners>.