CoGrammar

SE PORTFOLIO SESSION 1

SKILLS FOR LIFE
SKILLS BOOTCAMPS

Department for Education

Software Engineering Lecture Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(FBV: Mutual Respect.)**
- No question is daft or silly - **ask them!**
- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions. Moderators are going to be answering questions as the session progresses as well.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Open Classes. You can submit these questions here: **Open Class Questions**

Software Engineering Lecture Housekeeping cont.

- For all **non-academic questions**, please submit a query: **www.hyperiondev.com/support**
- Report a **safeguarding** incident: **www.hyperiondev.com/safeguardreporting**
- We would love your **feedback** on lectures: **Feedback on Lectures**

Progression Criteria

✅ Criterion 1: Initial Requirements

- Complete 15 hours of Guided Learning Hours and the first four tasks within two weeks.

✅ Criterion 2: Mid-Course Progress

- Software Engineering: Finish 14 tasks by week 8.
- Data Science: Finish 13 tasks by week 8.

✅ Criterion 3: Post-Course Progress

- Complete all mandatory tasks by 24th March 2024.
- Record an Invitation to Interview within 4 weeks of course completion, or by 30th March 2024.
- Achieve 112 GLH by 24th March 2024.

✅ Criterion 4: Employability

- Record a Final Job Outcome within 12 weeks of graduation, or by 23rd September 2024.

How do you define a variable in Python?

A. x = 1
B. int x = 1
C. x == 1
D. x: 1

Which of the following options is NOT a comparison operator?

A. >
B. <=
C. ==
D. =!

What is the type of the following value: True

A. String
B. Long
C. Condition
D. Boolean

Recap of Week 1: Beginning Programming

Input and Output

- Using input() to get input from the user
- Using print() to display output to the user

Variables

- Naming and defining variables
- Accessing and changing variables

Types

- Identifying types in Python
- Converting values from one type to another

String Manipulation

- Manipulating strings using slicing and indexing
- Using string functions and operations

Recap of Week 2: Beginning Programming

Control Structures

- Using If, Else and Elif statements for flow control
- Boolean values and their role in conditional statements

Operators

- Using comparison operators to compare values and logical operators to combine conditional statements
- Understanding assignment and arithmetic operators

While & For Loops

- Create and use while & For loops in Python
- Using break and continue statements

Pet Shopping Cart (Paws n Cart)

- **Background:** Valentina has a special place in her heart for her animal companions. She frequently shops online for pet supplies and volunteers at a nearby animal shelter.

- **Challenge:** Develop a shopping cart application, called Paws n Cart, for pet-related products to help manage your products and that can provide information on adoption centres and pet care advice.

- **Objective:** Develop a program to:
  - Create a shopping cart for a user which they can view
  - Allow users to add and remove items from their cart
  - Calculate the total cost of the cart when requested

Code Toolbox

- **Adding items to a list**

```
# Using Lists
list_of_items = ["Orange"]

list_of_items.append("Banana")
list_of_items.append("Apple")
list_of_items.append("Chair")
list_of_items.append("Pear")
```

- **Removing items from a list**

```
# Removing an element in a list
remove_item = "Chair"
list_of_items.remove(remove_item)
```

- **Output**

```
['Orange', 'Banana', 'Apple', 'Chair', 'Pear']
['Orange', 'Banana', 'Apple', 'Pear']
```

Code Toolbox

- **Displaying a List of Items**

```
# Diplaying a list of items stored in a list
done = False
counter = 0

# User a counter to keep track of which element we're busy with
# Print items in the list formatted neatly
while (not done):
    # Check if its the last element
    if (counter == len(list_of_items) - 1):
        done = True

    print("Item {:2}: \t {}".format(counter + 1, list_of_items[counter]))
    counter += 1
```

```
# For-Loop with Enumeration Approach
for counter, item in enumerate(list_of_items, 1):
    print(f"Item {counter}: \t{item}")
```

Demo: Example Output

```
Welcome to Paws n Cart!


--------------------------------------------------------------------------------
This is your shopping cart:
--------------------------------------------------------------------------------
Would you like to:
1. Add an item to your cart
2. Remove an item from your cart
3. View the total cost of your cart
4. Checkout
Enter the number of the option you would like to choose:
1
What item would you like to add to your cart: Whiskers Cat Food
How much does the item cost: R20.66
Whiskers Cat Food has been added to your cart successfully.


--------------------------------------------------------------------------------
This is your shopping cart:
Whiskers Cat Food               R     20.66
--------------------------------------------------------------------------------
Would you like to:
1. Add an item to your cart
2. Remove an item from your cart
3. View the total cost of your cart
4. Checkout
Enter the number of the option you would like to choose:
```

Demo: Example Output

```
--------------------------------------------------------------------------------
This is your shopping cart:
Whiskers Cat Food               R     20.66
Dog Kong                        R     50.99
Lucerne Hay                     R    160.00
--------------------------------------------------------------------------------
Would you like to:
1. Add an item to your cart
2. Remove an item from your cart
3. View the total cost of your cart
4. Checkout
Enter the number of the option you would like to choose:
2
Which item would you like to remove: Dog Kong
Dog Kong has been removed from cart successfully.


--------------------------------------------------------------------------------
This is your shopping cart:
Whiskers Cat Food               R     20.66
Lucerne Hay                     R    160.00
--------------------------------------------------------------------------------
Would you like to:
1. Add an item to your cart
2. Remove an item from your cart
3. View the total cost of your cart
4. Checkout
Enter the number of the option you would like to choose:
3
The total cost of your shopping cart is R180.66
```

Demo: Displaying a Menu Continuously

Use a while loop to display continuously

```
# Display the user menu and cart until checkout
done = False
while (not done):
    print("\n")
    print("-"*80)
    print("This is your shopping cart:")
```

```
    print("-"*80)
    print("Would you like to: ")
    print("1. Add an item to your cart")
    print("2. Remove an item from your cart")
    print("3. View the total cost of your cart")
    print("4. Checkout")
    choice = input("Enter the number of the option you would like to choose:\n")
```

Display menu items using print statements

Create an exit condition. In this case, option 4.

```
    elif choice == "4":
        # Exit from the program
        print("Thank you for shopping with Paws n Cart!")
        done = True
    else:
        print("That is not a valid option.")
```

Demo: Implementing Different Menu Options

```
if choice == "1":
    # Find out item and price and add it to cart
    item = input("What item would you like to add to your cart: ")
    price = float(input("How much does the item cost: R"))

    items.append(item)
    prices.append(price)

    print("{} has been added to your cart successfully.".format(item))
elif choice == "2":
    # Find item that must be removed and check that its in the cart
    remove = input("Which item would you like to remove: ")

    if remove in items:
        # Remove item from cart and pricelist
        index = items.index(remove)
        items.remove(remove)
        prices.pop(index)

        print("{} has been removed from cart successfully.".format(remove))
    else:
        print("That item is not in your cart.")
```

Paws n Cart: The Pet Shopping Cart

Create a shopping cart application for pet-related products. Users should be able to view their cart, add items, remove items and view the total cost of their cart.

Once users are done, they can checkout and the program will end.

Examples of Input Data:

- "Whiskers Cat Food"
- "Kong"
- "Lucerne Hay"
- "Fish Food"

Step-by-Step Tasks:

1. **Data Structure:** Create variables that will be used to store the items and their prices. This can be lists or strings.
2. **User Menu**: Create a user menu that displays the cart to users and the options they have i.e. add, remove, view total cost or checkout, in a clear way. The menu can be continuously displayed to users using a while loop.
3. **Manipulating the cart:** Implement ways to remove and add items to the cart using list or string functions.
4. **Calculating total cost:** Iterate through the list of prices of each item to calculate the total cost of the cart.

Advanced Challenges:

- Allow users to change the quantity of each item.
- Add functionality to your programme that will offer users personalised suggestions, based on products in their cart.
- Create a list of products that will displayed to the user and users will have to choose items from this list only.

Summary

Create shopping cart application

- ★ Create a cart mechanism, using Strings or Lists, that will store different items.
- ★ Allow users to add and remove items from the cart.
- ★ Ensure that the cart is being displayed to the user clearly.
- ★ Calculate the total cost of the cart when requested by the user.
- ★ Allow the user to checkout when they are ready.

Tips for solving this problem

- ★ Use a while loop to continuously show users a menu and their cart.
- ★ When storing items in a String, separate each item with a “,”
- ★ Store the prices of each item in a String or List in the same order as the cart.

Which of the following functions would you use to remove trailing and leading whitespace from a String?

A. remove(“ ”)
B. replace(“ ”, “”)
C. split()
D. strip()

What is one of the purposes of a while loop?

A. To execute a block of code a specific number of times.

B. To create an infinite loop that runs continuously.

C. To iterate over elements in a list or array.

D. To repeatedly execute a block of code as long as a specified condition is true.

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Questions and Answers

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Thank you for joining