HALMSTAD UNIVERSITY

Programming

Lab Sessions

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Assignment III - Presentations

- Zoom room for presentations:

  Meeting ID: 641 7002 9853

  Passcode: 034035

- Group order for presentation available at marcomarinho.com

- **Be on time**

- Martin will be available to solve doubts at the usual meeting room with an exercise list.

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Resources

- Slides for this lecture and the solutions for the second exercise list are available at marcomarinho.com.
- Videos for Martins solutions of the exercises are up.
- Assignment 4 is available.

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DET ÄR MATEMATIKFRI FREDAG MINA BEKANTA

Lists and Files

- Lists are a sequence of values of **any type**.
- Values of a list are assessed by using and index.
- Text files can be used to store data, so that our programs can have some long-term memory.
- Reading text files in python will often have a list as an output.

Pizza Shop

Example

- Let us write a program that stores the toppings of a pizza as a list and print out each ingredient in a line. Let's use indexes and direct iteration.

Example

```
#Our pizza
margherita = ['mozzarella', 'tomatoes', 'basil']

#Acessing elements by their index
for i in range(len(margherita)):
    print(margherita[i])

print('')

#Directly acessing the elements via python iteration
for ingredient in margherita:
    print(ingredient)
```

Example

- Now let's adjust the program so that the user can make his own custom pizza

Example

```
#User can craft his own pizza

#Initalize an empty list
pizza = []

#Ask the user to input ingredient for his pizza
while True:
    ingredient = input('Please enter the name of an ingredient for the pizza, type end to finish: ')

    if ingredient == 'end':
        break
    else:
        pizza.append(ingredient)

#Print out the ingredient of his pizza
print('You pizza has the following ingredient:')
for ingredient in pizza:
    print(ingredient)
```

Example

- Now, lets read the ingredient for the pizza from a file.

Example

```
#Read the pizza ingredients from a file

#Open the file
source_file = open('ingredients.txt')

#Get all the lines of the file as elements in a list
pizza_raw = source_file.readlines()

#Strip line breaks from the list elements
pizza = []
for element in pizza_raw:
    pizza.append(element.strip())

#The pizza from the file
print('The pizza stored on the file has the following ingredient:')
for ingredient in pizza:
    print(ingredient)
```

Example

- Now, lets craft a GigaPizza that is made from many smaller pizzas.

Example

```
#Craft out GigaPizza

#Initialize out gigapizza
gigapizza = []

#Create the first subpizza
gigapizza.append([])

#Inializa an index to navigate the subpizzas
current_pizza = 0

#user input ingredients for the pizza
while True:
    ingredient = input('Please enter an ingredient for the current pizza. Type end to finish the gigapizza and next to move on to the next pizza component: ')

    #If user wants to move to the next pizza, create a new subpizza and update the index
    if ingredient == 'next':
        gigapizza.append([])
        current_pizza = current_pizza + 1
    #break if user decides to finish
    elif ingredient == 'end':
        break
    #Add ingredient to current subpizza
    else:
        gigapizza[current_pizza].append(ingredient)

#Print the number of subpizzas
print('Your gigapizza is made out of', len(gigapizza), 'subpizzas')
print('')

#Initialize index of current subpizza to print
pizza_index = 1
for pizza in gigapizza:
    #print subpizza index and its ingredients
    print('Pizza', pizza_index)
    for ingredient in pizza:
        print(ingredient)
    print('')
    pizza_index = pizza_index + 1
```

Example

- Now, lets read the subpizzas from a file.

Example

```
#Read our gigapizza from a file

#Read all pizzas from the files
source = open('pizzas.txt')
raw_pizza = source.readlines()

#Remove line breaks and strange characters
all_pizzas = []
for element in raw_pizza:
    all_pizzas.append(element.strip())

#Initalize out gigapizza
gigapizza = []
gigapizza.append([])

#Initalize the current subpizza index
pizza_index = 0

#Check all ingredient lines from the pizza file
for ingredient in all_pizzas:
    #if the line was empty, create a new subpizza and update the subpizza index
    if ingredient == '':
        gigapizza.append([])
        pizza_index = pizza_index + 1
        continue
    #add ingredient to current subpizza
    else:
        gigapizza[pizza_index].append(ingredient)

#Print the number of subpizzas
print('Your gigapizza is made out of', len(gigapizza), 'subpizzas')
print('')

#Initialize index of current subpizza to print
pizza_index = 1
for pizza in gigapizza:
    #print subpizza index and its ingredients
    print('Pizza', pizza_index)
    for ingredient in pizza:
        print(ingredient)
    #Break a line and move to the next subpizza
    print('')
    pizza_index = pizza_index + 1
```

Exercise

- Try to write a program where the user can choose a pizza flavor from a list of flavors. Each flavor should have a list of toppings already defined.
- Tip: You can use two lists, one with the names of the flavors and another with the ingredients. They can be related by having the same index.

Exercise

```
#List of flavours

#Create a list with the name of our pizza flavours
flavours = ['sausage', 'margherita', 'chicken']

#Create a list that contains the separate list of ingredients
ingredients = []
#Add the list of ingredients for each flavours
ingredients.append(['cheese', 'sausage', 'onions'])
ingredients.append(['cheese', 'basil', 'tomatoes'])
ingredients.append(['cheese', 'chicken', 'catupiry'])

#Ask the user to choose a pizza flavours
print('Please choose a pizza: ')
print('[1] Sausage')
print('[2] Margherita')
print('[3] Chicken')
choice = int(input('==>'))

#Print the ingredients from the flavours selected by the user
print('Your pizza has the following ingredients: ')
for ingredient in ingredients[choice]:
    print(ingredient)
```

Fine

Mama Mia