**CBASE A-CODE-AMY WorkBook**

**Programming Questions**

1. Write a Python program which accepts the radius of a circle from the user and compute the area

Sample Output :

r = 1.1

Area = 3.8013271108436504

1. Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them
2. Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.
3. Ask the user for a number. Depending on whether the number is even or odd, print out an appropriate message to the user
4. Write a Python program which iterates the integers from 1 to 100. For multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print “FizzBuzz".
5. Write a Python function that takes a list of words and returns the length of the longest one
6. Take a list, a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89] and write a program that prints out all the elements of the list that are less than 5.
7. Write a Python program to remove and print every third number from a list of numbers until the list becomes empty.

Python Pandas Questions - DataSeries and DataFrame

1. Write a Python program to create and display a one-dimensional array-like object containing an array of data using Pandas module
2. Write a Python program to convert a Panda module Series to Python list and it's type
3. Write a Python program to add, subtract, multiple and divide two Pandas Series
4. Write a Python program to delete the 'attempts' column from the DataFrame

exam\_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],

'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],

'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],

'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}

labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

1. Write a Python program to select the specified columns and rows from a given data frame

Select 'name' and 'score' columns in rows 1, 3, 5, 6 from the following data frame.

exam\_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', ‘Jonas'],

'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],

'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],

'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', ‘yes']}

labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

Solutions

1. from math import pi

r = float(input ("Input the radius of the circle : "))

print ("The area of the circle with radius " + str(r) + " is: " + str(pi \* r\*\*2))

1. firstName = input("Input your First Name : “)

lastName = input("Input your Last Name : “)

print ("Hello " + lastName + " " + firstName)

1. name = input("What is your name: “)

age = int(input("How old are you: “))

year = str((2014 - age)+100)

print(name + " will be 100 years old in the year " + year)

1. num = input("Enter a number: ")

mod = num % 2

if mod > 0:

print("You picked an odd number.")

else:

print("You picked an even number.")

1. def test ():

i = 0

while (i < 100):

if (i % 3 == 0):

print("fizz")

elif (i % 5 == 0):

print("buzz")

elif ((i % 3 == 0) and (i % 5 == 0)):

print("fuiizbuzz")

else:

print(i)

i = i + 1

test()

1. def find\_longest\_word(words\_list):

word\_len = []

for n in words\_list:

word\_len.append((len(n), n))

word\_len.sort()

return word\_len[-1][1]

print(find\_longest\_word(["PHP", "Exercises", "Backend"]))

1. a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

num = int(raw\_input("Choose a number: "))

new\_list = []

for i in a:

if i < num:

new\_list.append(i)

print new\_list

1. def remove\_nums(int\_list):

#list starts with 0 index

position = 3 - 1

idx = 0

len\_list = (len(int\_list))

while len\_list>0:

idx = (position+idx)%len\_list

print(int\_list.pop(idx))

len\_list -= 1

nums = [10,20,30,40,50,60,70,80,90]

remove\_nums(nums)

1. def remove\_nums(int\_list):

#list starts with 0 index

position = 3 - 1

idx = 0

len\_list = (len(int\_list))

while len\_list>0:

idx = (position+idx)%len\_list

print(int\_list.pop(idx))

len\_list -= 1

nums = [10,20,30,40,50,60,70,80,90]

remove\_nums(nums)

Python Pandas Questions - DataSeries and DataFrame

1. import pandas as pd

ds = pd.Series([2, 4, 6, 8, 10])

print(ds)

1. import pandas as pd

ds = pd.Series([2, 4, 6, 8, 10])

print("Pandas Series and type”)

print(ds)

print(type(ds))

print("Convert Pandas Series to Python list”)

print(ds.tolist())

print(type(ds.tolist()))

1. dimport pandas as pd

ds1 = pd.Series([2, 4, 6, 8, 10])

ds2 = pd.Series([1, 3, 5, 7, 9])

ds = ds1 + ds2

print("Add two Series:")

print(ds)

print("Subtract two Series:")

ds = ds1 - ds2

print(ds)

print("Multiply two Series:")

ds = ds1 \* ds2

print(ds)

print("Divide Series1 by Series2:")

ds = ds1 / ds2

print(ds)

4.import pandas as pd

import numpy as np

exam\_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],

'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],

'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],

'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}

labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

df = pd.DataFrame(exam\_data , index=labels)

print("Orginal rows:")

print(df)

print("\nDelete the 'attempts' column from the data frame:")

df.pop('attempts')

print(df)

5. import pandas as pd

import numpy as np

exam\_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],

'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],

'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],

'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}

labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

df = pd.DataFrame(exam\_data , index=labels)

print("Select specific columns and rows:")

print(df.iloc[[1, 3, 5, 6], ['name', 'score']])

**Resources:**

Courses:

Data Science and Data Analysis Resources

Courses

1. Data Analysis with Python & Pandas - <https://www.udemy.com/python-step-by-step-build-a-data-analysis-program/?couponCode=newquora>
2. Data Analysis - <https://www.lynda.com/Numpy-tutorials/Introduction-Data-Analysis-Python/419162-2.html>
3. Intro to Python for Data Science - <https://www.datacamp.com/courses/intro-to-python-for-data-science>
4. Dataquest - <https://www.dataquest.io/> (you work with real world data science problems )

**Books :**

1. Python For Data Analysis - Data wrangling with Pandas, NumPy, Python by Willam Mckinney. Here is a link to buy: <http://shop.oreilly.com/product/0636920023784.do>