UNIRAZAK
UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

MARCH 2024

COURSE TITLE   PROGRAMMING FOR ANALYTICS

COURSE CODE   RBAN3233

DATE/DAY   29 JUNE 2024 / SATURDAY

TIME/DURATION   01:00 PM - 03:00 PM / 02 Hour(s) 00 Minute(s)

INSTRUCTIONS TO CANDIDATES :

1. Please read the instruction under each section carefully.
2. Candidates are reminded not to bring into examination hall/room any form of written materials or electronic gadget except for stationery that is permitted by the Invigilator.
3. Students who are caught breaching the Examination Rules and Regulation will be charged with an academic dishonesty and if found guilty of the offence, the maximum penalty is expulsion from the University.

(This Question Paper consists of 7 Printed Pages including front page)

DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

This question paper consists of TWO (2) sections. Answer ALL questions in the answer booklet provided. **[100 MARKS]**

SECTION A **(40 Marks)**

There are TWENTY (20) questions in this section. Answer ALL questions in the answer booklet provided.

1. What does the append() function do in Python?

   A. Deletes the last item of a list
   B. Adds a new item to the end of a list
   C. Finds an item in a list
   D. Sorts a list

2. How do you initiate a dictionary with the keys "a", "b", and "c" all set to 0 in Python?

   A. {a: 0, b: 0, c: 0}
   B. {"a": 0, "b": 0, "c": 0}
   C. dict(a=0, b=0, c=0)
   D. {"a", "b", "c": 0}

3. What is the output of the following code: print("Hello, World!".split())?

   A. ["Hello,", "World!"]
   B. ["Hello, World!"]
   C. ["Hello", "World!"]
   D. ["Hello, World!"]

4. What is the primary purpose of Pandas in data analysis?

   A. Data visualization
   B. Machine learning
   C. Data manipulation and analysis
   D. Web development

5. In Python, which function is used to read a CSV file into a DataFrame in Pandas?

    A. pd.read_csv()
    B. pd.csv_reader()
    C. pd.open_csv()
    D. pd.load_csv()

6. Which of the following is **NOT** a valid way to create a DataFrame in Pandas?

    A. pd.DataFrame(data)
    B. pd.DataFrame(data, columns=['A', 'B'])
    C. pd.DataFrame.from_csv('data.csv')
    D. pd.read_csv('data.csv')

7. What is the output type of the function pd.read_csv() when used in Python?

    A. List
    B. DataFrame
    C. Dictionary
    D. String

8. What is the purpose of the plt.title() function in Matplotlib?

    A. Set the title of the current Axes
    B. Plot a title on the x-axis
    C. Create a new figure
    D. Add a legend to the plot

9. How can you display a seaborn plot in Python?

    A. Using the show() function
    B. Using the plot() function
    C. Using the display() function
    D. Seaborn plots are automatically displayed

10. What does the head() function in Pandas do?

    A. Returns the last 5 rows of a DataFrame
    B. Returns the first 5 rows of a DataFrame
    C. Sorts the DataFrame in ascending order
    D. Computes the mean of the DataFrame

11. What does the len() function do in Python?

    A. Returns the last element of a list
    B. Returns the length of a list or string
    C. Returns the maximum value in a list
    D. Returns the square root of a number

12. Which of the following is an example of a Boolean value in Python?

    A. "True"
    B. 0
    C. 1.5
    D. True

13. What is the purpose of the range() function in Python?

    A. Generate a sequence of numbers
    B. Calculate the sum of a list
    C. Create a new list
    D. Calculate the average of a list

14. Which method is used to replace missing values in a DataFrame in Pandas?

    A. replace()
    B. fillna()
    C. dropna()
    D. clean()

15. What is the default behavior of the sort() function in Python lists?

    A. Sorts the list in descending order
    B. Sorts the list in ascending order
    C. Shuffles the list
    D. Reverses the list

16. What is the purpose of the groupby() function in Pandas?

    A. To concatenate multiple DataFrames
    B. To sort a DataFrame alphabetically
    C. To plot a graph of a DataFrame
    D. To split the data into groups based on some criteria

17. What is the primary use of the lambda function in Python?

    A. Error handling
    B. Creating multi-threaded programs
    C. Writing anonymous functions
    D. Importing libraries

18. What is the purpose of the merge() function in Pandas?

    A. To combine two or more DataFrames vertically
    B. To combine two or more DataFrames horizontally using a key
    C. To sort DataFrames based on keys
    D. To split a DataFrame into several smaller DataFrames

19. Which of the following is used to handle errors in Python?

    A. handle
    B. try-except
    C. error-block
    D. fix

20. What does the unique() function do in Pandas?

    A. Returns a DataFrame with duplicate rows removed
    B. Returns an array of all unique values in a specified column
    C. Creates unique indices for a DataFrame
    D. Sorts a DataFrame by unique key

SECTION B   (60 Marks)

There are THREE (3) questions in this section. Answer ALL questions in the answer booklet provided.

QUESTION 1   **(20 marks)**

Write a Python function called calculate average that takes a list of numbers as input and returns the average (mean) of those numbers. Provide an example of how you would use this function with a list of numbers.

QUESTION 2   **(20 marks)**

You have a CSV file containing a dataset with columns for "Name," "Age," and "Salary." Using Pandas, write Python code to read the CSV file into a DataFrame, filter the data to include only individuals aged 30 or older, and calculate the average salary for this group.

QUESTION 3   **(20 marks)**

Explain the process and importance of data cleaning in programming for analytics. Discuss at least **THREE (3)** common data cleaning techniques used in Python programming and illustrate with code examples how these techniques can be applied to prepare a dataset for analysis.

*** END OF QUESTION PAPER ***