

All interns are required to join Adept Tech. Solution Company on June 24th. Prior to this date, please ensure completion of the following tasks:

1. GitHub Setup:

- Establish a GitHub account if not already created.
- Create a public repository titled "Adept Internship" and include the following information in the readme:  
Your NAME: \_\_\_\_\_  
Your Institute: \_\_\_\_\_  
Self-description: \_\_\_\_\_  
Motivation for internship: \_\_\_\_\_
- Upload a "github cheatsheet" in text format. You may refer to any available internet resource.

**Note: This repository will be utilized throughout your internship, thus clone it onto your local machine.**

2. Visual Studio Code:

- Install Visual Studio Code (VSC) on your system and navigate to the cloned directory.
- Develop a Cyclic Redundancy Check (CRC) program in both C++ and Python, and push it to the remote repository.

3. Object-Oriented Programming (OOP) with Python:

- Construct a matrix class incorporating the following member functions:  
SUM  
Subtraction  
Multiplication
- These functions should accommodate matrices of any order.
- Conduct unit tests for matrices of order 2 and upload all to the remote repository.

4. Fundamentals of Datasets, Dataframes, and RDDs:

- Download a structured numerical dataset of 10 MB size in CSV format from Kaggle.
- Utilize the Python Pandas library to perform the following analyses:  
Calculate mean, median, mode, minimum, maximum, distinct count, total count, and the 75th percentile.
- Develop a function to assess the correlation between two columns.
- Implement dataset splitting into testing and training datasets using the Scikit-Learn library.
- Upload all analyses to the remote repository.

5. PySpark:

- Conduct a literature review on PySpark and provide a report outlining its potential utility for the tasks described in #4.

6. Application Programming Interfaces (APIs):

- Develop a basic FastAPI program capable of returning the length of the provided prompt.
- Implement unit tests utilizing "Postman".