**Indian Institute of Technology Patna**

**Department of Computer Science and Engg**

**CS575: Applied Time Series Analysis**

**4th May 2021,**

**Total marks: 100**

**Instructions**

**Attempt all the questions. Marks are given in [ ].**

**Submit by date: 5th May 2021 / 12pm. Answers must be unique, shared answers if found (All candidates will be given zero marks)**

**Submissions must be uploaded to the following link in a single zip file ( word/pdf file (answers A1, A2))**

Zip file(Analysis and Code)(use “roll\_number\_end\_sem\_cs575” as the filename); E.g. 1701CS52\_ end\_sem\_cs575.zip

*Upload on PCLOUD*

<https://u.pcloud.com/#page=puplink&code=0kkkZx8ooeLTT4KHPeYzJ9z4lWyC27TV7>

Also upload on your GitHub repository

<Respective Git Repo>

Uploading on both pcloud and git is mandatory.

**Make appropriate assumption if required. Do not send any response to the personal emails of the instructor. If you do so, your paper will not be evaluated.**

A1: Consider a time series stock values of various companies for a given duration (download using the script below). Perform an exploratory data analysis. (submit your code and analysis)

[30 points]

A2: Consider a time series stock values of various companies for a given duration (download using the script below). Your task is to find an appropriate model for the stock prediction.

Compare at least with three different models including classical and Machine Learning Models. (submit your code and analysis)

[70 points ]

<See next page for dataset download codes>

###############################################

#download data from yahoo finance

###############################################

##data source: http://finance.yahoo.com/

"""

from pandas\_datareader import data as pdr

from datetime import datetime

#download data

ibm = pdr.DataReader('IBM', 'yahoo', start=datetime(2014, 8, 1), end=datetime(2016, 11, 30))

aapl = pdr.DataReader('AAPL', 'yahoo', start=datetime(2014, 8, 1), end=datetime(2016, 11, 30))

fb = pdr.DataReader('FB', 'yahoo', start=datetime(2014, 8, 1), end=datetime(2016, 11, 30))

googl = pdr.DataReader('GOOGL', 'yahoo', start=datetime(2014, 8, 1), end=datetime(2016, 11, 30))

#print first few lines of data

print(ibm.head())

print(aapl.head())

print(fb.head())

print(googl.head())

#export and save as csv files

ibm.to\_csv('IBM\_stock.csv', sep=',')

aapl.to\_csv('Apple\_stock.csv', sep=',')

fb.to\_csv('Facebook\_stock.csv', sep=',')

googl.to\_csv('Google\_stock.csv', sep=',')