```
Input: Results of semester, ordered as
            Multiple columns representing subject/subject code
            Each row having Grades obtained by student, comma separated Assuming grade as: S+, S, A, B, C, D, E, F, NE, NP, PP
#
#
#
            Saved as a CSV, comma separated value file called result.csv
# To convert xlsx as csv:
# The Excel sheet should have columns that represent different subject, and
# each row content corresponding to grade obtained by the student for that subject
# Excel Sheet:
#
             Code1 | Code2 | Code3
#
             S1G1 | S1G2 | S1G3
#
#
             S2G1 | S2G2 | S2G3
#
#
             S3G1
                     S3G2
                              S3G3
#
# An option is available in Excel / Calc of Save as CSV
 Save the result.xlsx as result.csv
# Excel Sheet result.xlsx
#
             Code1 | Code2 | Code3
#
#
               S+ |
                        S
                                F
#
#
               S+
                       Α
#
#
               F
                        S+
                                F
#
#
 The result.csv will now have:
        Code1 , Code2, Code3
#
#
        S+ , S , F
        S+ , A , S
#
#
            , F , F
# Output: Count of grades obtained in subject as csv
          Example output file "analysis.csv"
          CourseCode, S+, S, A, B, C, D, E, F, NE, NP, PP, TF, TP, PassPercent
#
#
          SubjectCode1, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 2, 66.66
          SubjectCode2, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 3, 100
#
          SubjectCode3, 0, 0, 0, 0, 0, 0, 0, 3, 0, 0, 0, 3, 0, 0
#
         where TF is Total Failed TP is Total Passed
#
#
#
          PassPercent = TP/(TP+TF)
 If the analysis.csv file is opened in Excel / Calc then the same csv is
    displayed in tabular format as
#
#
                                                       NP
                                                            PP
                                                                       ΤP
             S+
                  S
                       Α
                           В
                                C
                                    D
                                        Е
                                             F
                                                 NE
                                                                  ΤF
                                                                             PassPerc
#
#
    Code1
              2
                  0
                       0
                           0
                                0
                                    0
                                        0
                                                 0
                                                       0
                                                            0
                                                                       2
                                                                               66.66
                                             1
                                                                  1
#
#
                               0
                                    0
                                        0
                                             0
                                                 0
                                                       0
                                                            0
                                                                  0
                                                                       3
    Code2
              1
                  1
                       1
                           0
                                                                                100
#
#
              0
                  0
                       0
                           0
                               0
                                    0
                                        0
                                             3
                                                 0
                                                       0
                                                            0
                                                                  3
                                                                       0
    Code2
                                                                                 0
```

```
# initialize dictionary
# read result.csv
# For each student
   For each subject grade
#
     update dictionary
#
#
    write current subject dictionaty to analysis.csv
   reinitialize dictionary
# Save analysis.csv
import csv
with open('result.csv', 'r') as csvfile:
    results = csv.reader(csvfile, delimiter=',')
    subjectCode = next(results, None)
    print ( "Subject Codes = ", subjectCode )
    print ( "Total number of Subjects = ", len(subjectCode) )
    subject={}
    for code in subjectCode:
        subject[code] = { 'S+': 0, 'S': 0, 'A': 0, 'B': 0, 'C': 0, 'D': 0, 'E': 0, 'F': 0, 'NE': 0, 'NP': 0, 'PP': 0, 'TF': 0, 'TP': 0, }
    # consider PASS column of result
    totalNumberOfStudents = 0
    totalNumberOfPassStudents = 0
    totalNumberOfFailStudents = 0
    for row in results:
        totalNumberOfStudents = totalNumberOfStudents + 1
        fail = False
        for code, grade in zip( subjectCode, row ):
            if ( grade != '' ):
                subject[code][grade] = subject[code][grade] + 1
                # F is also incremented here
                if ( grade == 'F' ):
                    subject[code]['TF'] = subject[code]['TF'] + 1
                    fail = True
                elif ( grade == 'NE' ):
                    pass
                else:
                    subject[code]['TP'] = subject[code]['TP'] + 1
        if ( fail == True ):
            totalNumberOfFailStudents = totalNumberOfFailStudents + 1
        else:
            totalNumberOfPassStudents = totalNumberOfPassStudents + 1
with open('analysis.csv', 'w') as csvfile:
   'B' , 'C' ,
```

```
for code in subjectCode:
          if ( subject[code]['TF'] + subject[code]['TP'] ) == 0:
               passPercentage = 0
passPercentage = ( \ 100.00 \ * \ subject[code]['TP'] \ ) \ / \ ( \ subject[code]['TF'] \ + \ subject[code]['TP'] \ )
          writeAnalysis.writerow( [ code , subject[code]['S+'] ,
                                            subject[code]['S'] , subject[code]['A'] ,
                                            subject[code]['B'] , subject[code]['C'] ,
                                            subject[code]['D'] , subject[code]['E'] ,
subject[code]['F'] , subject[code]['NE'] ,
subject[code]['NP'] , subject[code]['PP'] ,
subject[code]['TF'] , subject[code]['TP'],
passPercentage])
     writeAnalysis.writerow([])
     writeAnalysis.writerow( [ ] )
     writeAnalysis.writerow( [ "OverallPerformance" ] )
writeAnalysis.writerow( [ "TotalNumberOfStudents", totalNumberOfStudents ] )
writeAnalysis.writerow( [ "TotalNumberOfFailStudents",
totalNumberOfFailStudents ] )
     writeAnalysis.writerow( [ "TotalNumberOfPassStudents",
totalNumberOfPassStudents ] )
     writeAnalysis.writerow( [ "PassPercentage", ( 100.00 *
totalNumberOfPassStudents ) / ( totalNumberOfPassStudents +
totalNumberOfFailStudents ) ] )
     print("analysis.csv created")
# Save the result.csv and the Python script resultAnalysis.py is same folder
# Open Python Terminal and run this script as
# python resultAnalysis.py
# If input result.csv , hence result.xlsx format was correct, then
# analysis.csv will be generated
# Now open analysis.csv in Excel / Calc
# Improvement: Use MapReduce?
```