IST 1025B GROUP 3 ASSIGNMENT 1

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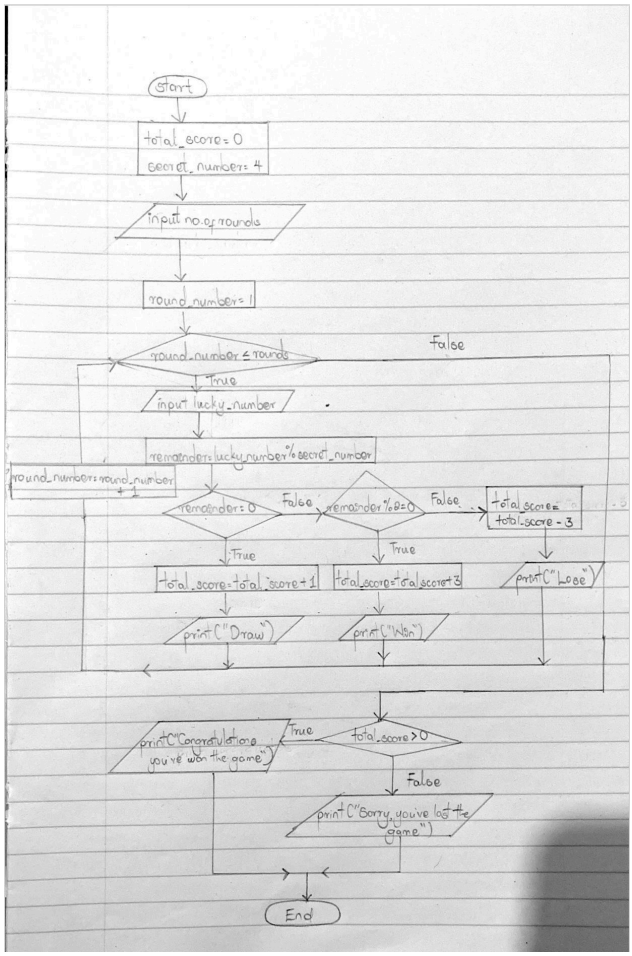
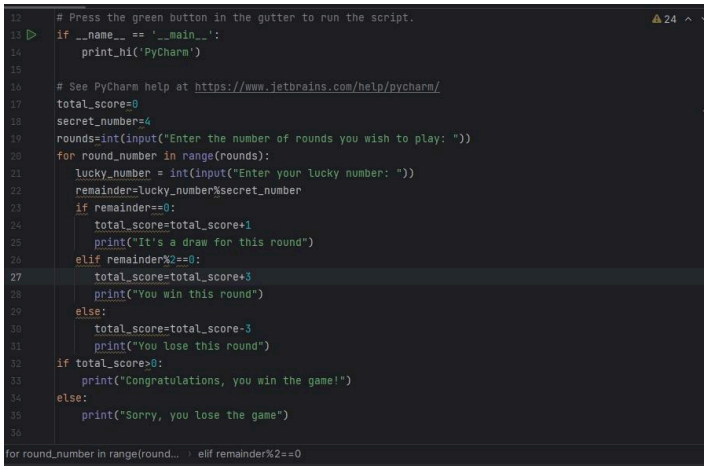
Question 1.

A program is required for a computer game. The user keys in the number of rounds he wishes toplay.For each round the user enters his lucky number. The program takes the number and divides it with a secret number. If the remainder of the division is zero, it is considered a draw for the round and the total score is incriminated by 1. Otherwise if it is any other even number, it is considered a win for the round and the total score is incremented by 3. However if it is an odd number, it is considered a loss fortheround and thPe total score is decremented by 3. This is done until he completes his rounds. Hewinsifthetotal score at the end is a positive number. required

i) Draw the flowchart of your solution



ii) Write the corresponding program using Python programming language



```
# Press the green button in the gutter to run the script.
if __name__ == '__main__':
    print_hi('PyCharm')

# See PyCharm help at https://www.jetbrains.com/help/pycharm/
total_score=0
secret_number=4
rounds=int(input("Enter the number of rounds you wish to play: "))
for round_number in range(rounds):
  lucky_number = int(input("Enter your lucky number: "))
  remainder=lucky_number%secret_number
  if remainder==0:
     total_score=total_score+1
     print("It's a draw for this round")
  elif remainder%2==0:
     total_score=total_score+3
     print("You win this round")
  else:
     total_score=total_score-3
     print("You lose this round")
if total_score>0:
    print("Congratulations, you win the game!")
else:
    print("Sorry, you lose the game")
```

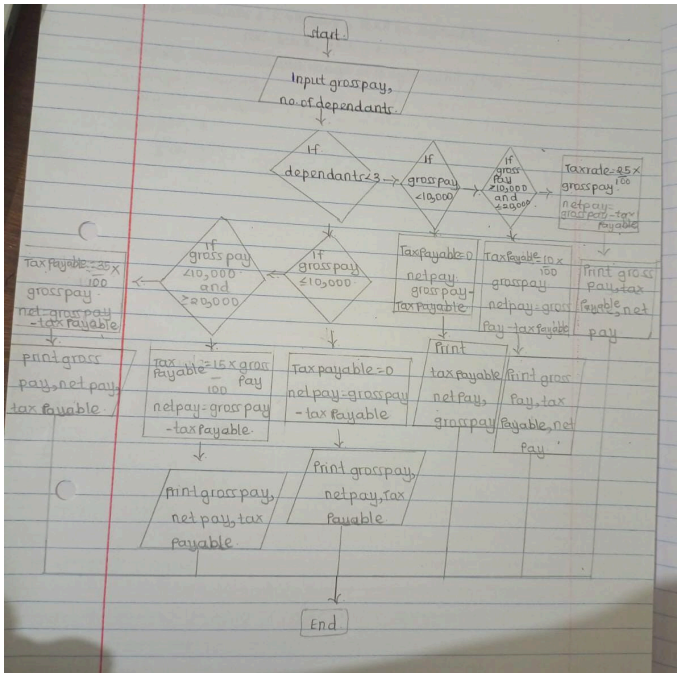

total_score=0
secret_number=4
rounds=int(input("Enter the number of rounds you wish to play: "))
for round_number in range(rounds):
** lucky_number = int(input("Enter your lucky number: "))**
** remainder=lucky_number%secret_number**
** if remainder==0:**
**   total_score=total_score+1**
**   print("It's a draw for this round")**
** elif remainder%2==0:**
**   total_score=total_score+3**
**   print("You win this round")**
** else:**
**   total_score=total_score-3**
**   print("You lose this round")**
if total_score>0:
**   print("Congratulations, you win the game!")**
else:
**   print("Sorry, you lose the game")**

2. Study the following table used to compute the tax payable by employees in certain organization

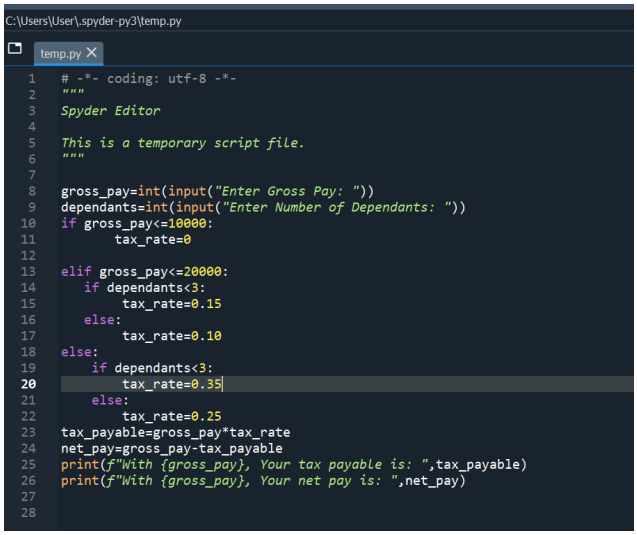
Gross Pay	Fewer than Three Dependants	Three or more Dependants
KSh 10,000 or less	Tax rate=0	Tax rate=0
More than KSh10, 000 and less than or equal to KSh20, 000	Tax rate=15%	Tax rate = 10%
Over KSh20, 000	Tax rate=35%	Tax rate=25%

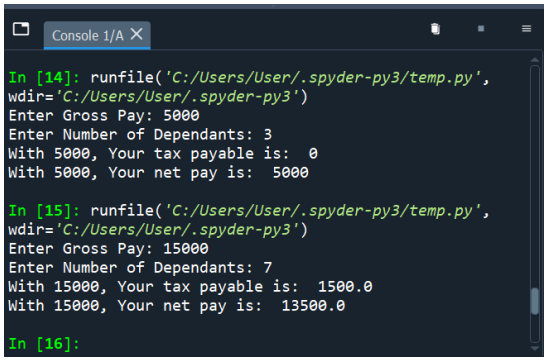
A program is required to input the gross pay and number of dependents of an employee and then computes the tax payable and net pay. The program should output gross pay, tax payable and net pay of an employee in a suitable format. Hint: Tax payable = Gross pay * Tax rate Net pay = Gross pay - Tax payable Required

i) Draw the flowchart of your solution



ii) Write the corresponding program using Python programming language






```
gross_pay=int(input("Enter Gross Pay: "))
dependants=int(input("Enter Number of Dependants: "))
if gross_pay<=10000:
      tax_rate=0

elif gross_pay<=20000:
  if dependants<3:
       tax_rate=0.15
  else:
       tax_rate=0.10
else:
   if dependants<3:
       tax_rate=0.35
   else:
       tax_rate=0.25
tax_payable=gross_pay*tax_rate
net_pay=gross_pay-tax_payable
print(f"With {gross_pay}, Your tax payable is: ",tax_payable)
print(f"With {gross_pay}, Your net pay is: ",net_pay)
```

3. A program is required that accepts the student admission number, student surname and three subjects marks and displays the same along with the student average mark.

The program should also display the student grade depending on the average marks the student obtains. The grading system is shown in the table below:

Average Mark	Grade
0-59	Fail
60-66	D
67-76	C
77-86	B
87-100	A

Your program should prompt the user if to continue. If the user enter "Y" then program computes for another student and "N" the program exits Required: -

i) Write a pseudocode algorithm to represent this problem

START

Input student admission number

Input student surname

Input marks for each subject

Calculate Average marks as; mark for subject 1 = mark for subject 2 + mark for subject 3 divide by three.

If average mark < 59

Display fail, student admission number, student surname

Else if average mark > 60 and < 66

Display grade D, student admission number, student surname

Else if average mark > 67 and < 76

Display grade C, student admission number, student surname

Else if average mark is > 77 and 86

Display grade B, student admission number, student surname

Else if average mark is > 87 and < 100

Display grade A, student admission number, student surname

END

ii) Write a computer program in Python to accomplish this

```
total = 0
counter = 1
while True :
    studentId = input('Enter student id : ')
    surName = input('Enter surname : ')
    while counter <= 3 :
        score = int(input('Enter score : '))
        total += score
        counter += 1
    average = total / 3
    if average >= 0 and average <= 59 :
      print('\nStudent Id : %s\nStudent surname : %s\nGrade :
Fail'%(studentId,surName))
    elif average >= 60 and average <= 66 :
        print('\nStudent Id : %s\nStudent surname : %s\nGrade :  D' %
(studentId, surName))
    elif average >= 67 and average <= 76 :
        print('\nStudent Id : %s\nStudent surname : %s\nGrade :  C' %
(studentId, surName))
    elif average >= 77 and average <=86 :
        print('\nStudent Id : %s\nStudent surname : %s\nGrade :  B' %
(studentId, surName))
    else :
        print('\nStudent Id : %s\nStudent surname : %s\nGrade :  A' %
(studentId, surName))
    counter = 0
    total = 0
    repeat =input('\nDo you want to continue("Y/N") : ').upper()
    if repeat == 'Y' :
        continue
    else :
        exit(0)
```

total = 0

counter = 1

while True:

studentId = input('Enter student id : ')

surName = input('Enter surname : ')

while counter <= 3:

```
        score = int(input('Enter score : '))
        total += score
        counter += 1
    average = total / 3
    if average >= 0 and average <= 59:
            print('\nStudent Id : %s\nStudent surname : %s\nGrade : Fail' % (studentId, surName))
    elif average >= 60 and average <= 66:
        print('\nStudent Id : %s\nStudent surname : %s\nGrade : D' % (studentId, surName))
    elif average >= 67 and average <= 76:
        print('\nStudent Id : %s\nStudent surname : %s\nGrade : C' % (studentId, surName))
    elif average >= 77 and average <= 86:
        print('\nStudent Id : %s\nStudent surname : %s\nGrade : B' % (studentId, surName))
    else:
        print('\nStudent Id : %s\nStudent surname : %s\nGrade : A' % (studentId, surName))
    counter = 0
    total = 0
    repeat = input('\nDo you want to continue(Y/N) : ').upper()
    if repeat == 'Y':
        continue
    else:
        exit(0)
```