Question 1

Design a **Student** class so that the following output is produced upon executing the following code

s1 = Student() print("==========") s2 = Student("Carol") print("==========") s3 = Student("Jon", "EEE") print("==========") s1.update_name("Bob") s1.update_department("CSE") s2.update_department("BBA") s1.enroll("CSE110", "MAT110", "ENG091") s2.enroll("BUS101") s3.enroll(""MAT110", "PHY111") print("##########") s1.printDetail() print("==========") s2.printDetail() print("==========") s3.printDetail()	Student name and department need to be set ========== Department for Carol needs to be set ========== Jon is from EEE department ========== ########## Name: Bob Department: CSE Bob enrolled in 3 course(s): CSE110, MAT110, ENG091 ========== Name: Carol Department: BBA Carol enrolled in 1 course(s): BUS101 ========== Name: Jon Department: EEE Jon enrolled in 2 course(s): MAT110, PHY111

Question 2

Design a **Student** class so that the following output is produced upon executing the following code:

[Hint: Each course has 3.0 credit hours. You must take at least 9.0 and at most 12.0 credit hours.]

```
s1 = Student("Alice","20103012","CSE")
s2 = Student("Bob", "18301254","EEE")
s3 = Student("Carol", "17101238","CSE")
print("############################")
print(s1.details())
print("############################")
print(s2.details())
print("############################")
s1.advise("CSE110", "MAT110", "PHY111")
print("############################")
s2.advise("BUS101", "MAT120")
print("############################")
s3.advise("MAT110", "PHY111", "ENG102",
"CSE111", "CSE230")
```

```
############################
Name: Alice
ID: 20103012
Department: CSE
############################
Name: Bob
ID: 18301254
Department: EEE
############################
Alice, you have taken 9.0 credits.
List of courses: CSE110, MAT110, PHY111
Status: Ok
############################
Bob, you have taken 6.0 credits.
List of courses: BUS101, MAT120
Status: You have to take at least 1 more
course.
############################
Carol, you have taken 15.0 credits.
List of courses: MAT110, PHY111, ENG102,
CSE111, CSE230
Status: You have to drop at least 1 course.
```

Question 3

Write the **Hotel** class with the required methods to give the following outputs as shown.

# Write your codes here.	***OUTPUT:***
# Do not change the following lines of code. h = Hotel("Lakeshore") h.addStuff("Adam", 26) print("==========") print(h.getStuffById(1)) print("==========") h.addGuest(“Carol”,35,”123”) print("==========") print(h.getGuestById(1)) print("==========") g2 = Hotel("Guest", "Diana, 32, “431”) print("==========") print(g2.getDetails())) print("==========") s1.allStaffs() print("==========") g1.allGuest()	Staff With ID 1 is added ========== Staff ID: 1 Name: Adam Age: 26 Phone no.: 000 ========== Guest With ID 1 is created ========== Guest ID: 1 Name: Carol Age: 35 Phone no.: 123 ========== Guest With ID 2 is created ========== Guest ID: 2 Name: Dianal Age: 32 Phone no.: 431 ========== All Staffs: Number of Staff: 1 Staff ID: 1 Name: Adam Age: 26 Phone no: 000 ========== All Guest: Number of Guest: 2 Guest ID: 1 Name: Carol Age: 35 Phone no.: 123 Guest ID: 2 Name: Dianal Age: 32 Phone no.: 431

Question 4

Write the **Author** class with the required methods to give the following outputs as shown.

# Write your codes here. ***# Do not change the following lines of code.*** print("==========") a1 = Author() print("==========") a1.addBook(“Ice”, “Science Fiction”) print("==========") a1.setName(“Anna Kavan”) a1.addBook(“Ice”, “Science Fiction”) a1.printDetail() print("==========") a2 = Author(“Humayun Ahmed”) a2.addBook(“Onnobhubon”, “Science Fiction”) a2.addBook(“Megher Upor Bari”, “Horror”) print(==========") a2.printDetail() a2.addBook(“Ireena”, “Science Fiction”) print("==========") a2.printDetail() print("==========")	***OUTPUT:*** ========== ========== A book can not be added without author name ========== Number of Book(s): 1 Author Name: Anna Kavan Science Fiction: Ice ========== ========== Number of Book(s): 2 Author Name: Humayun Ahmed Science Fiction: Onnobhubon Horror: Megher Upor Bari ========== Number of Book(s): 3 Author Name: Humayun Ahmed Science Fiction: Onnobhubon, Ireena Horror: Megher Upor Bari ==========

Question 5

Write the **Hospital** class with the required methods to give the following outputs as shown.

# Write your codes here.	***OUTPUT:***
# Do not change the following lines of code. d1 = Hospital("Doctor", "Samar Kumar", "Neurologist") d1.addDoctor("1d") print(d1.getDoctorByID("1d")) print("==========") p1 = Hospital("Patient", "Kashem Ahmed", 35, 12345) p1.addPatient("1p") print(d1.getPatientByID("1p")) print("==========") p1 = Hospital("Patient", "Tanina Haque", 26, 33456) p1.addPatient("2p") print(d1.getPatientByID("2p")) print("==========") d1.allDoctors() p1.allPatients()	Doctor's ID: 1d Name: Samar Kumar Speciality: Neurologist ========== Patient's ID: 1p Name: Kashem Ahmed Age: 35 Phone no.: 12345 ========== Patient's ID: 2p Name: Tanina Haque Age: 26 Phone no.: 33456 ========== All Doctors: Number of Doctors: 1 {'1d': ['Samar Kumar', 'Neurologist']} All Patients: Number of Patients: 2 {'1p': ['Kashem Ahmed', 35, 12345], '2p': ['Tanina Haque', 26, 33456]}

Question 6

```
# Write your code here for subtasks 1-4

t1 = Teacher("Saad Abdullah", "CSE")
t2 = Teacher("Mumit Khan", "CSE")
t3 = Teacher("Sadia Kazi", "CSE")
c1 = Course("CSE 110 Programming Language I")
c2 = Course("CSE 111 Programming Language-II")
c3 = Course("CSE 220 Data Structures")
c4 = Course("CSE 221 Algorithms")
c5 = Course("CCSE 230 Discrete Mathematics")
c6 = Course("CSE 310 Object Oriented
Programming")
c7 = Course("CSE 320 Data Communications")
c8 = Course("CSE 340 Computer Architecture")
t1.addCourse(c1)
t1.addCourse(c2)
t2.addCourse(c3)
t2.addCourse(c4)
t2.addCourse(c5)
t3.addCourse(c6)
t3.addCourse(c7)
t3.addCourse(c8)
t1.printDetail()
t2.printDetail()
t3.printDetail()
```

Output:

```
==================================
Name:  Saad Abdullah
Department:  CSE
List of courses
==================================
CSE 110 Programming Language I
CSE 111 Programming Language-II
==================================
==================================
Name:  Mumit Khan
Department:  CSE
List of courses
==================================
CSE 220 Data Structures
CSE 221 Algorithms
CCSE 230 Discrete Mathematics
==================================
==================================
Name:  Sadia Kazi
Department:  CSE
List of courses
==================================
CSE 310 Object Oriented Programming
CSE 320 Data Communications
CSE 340 Computer Architecture
==================================
```

Question 7

Write the **Game** class with the required properties to give the following outputs as shown.

# Write your codes here. ***# Do not change the following lines of code.*** h = Game("Valorant") print("==========") h.addDuelist("Raze","Paint shells","SHOWSTOPPER",8) print("==========") print(h.printAllDuelists()) print("==========") h.addDuelist("Phoenix","Hot hands","Run it back") print("==========") print(h.printAllDuelists()) print("==========") h.addSentinel("Sage","Healing ORB","Resurrection") print("==========") print(h.printAllSentinels()) print("==========") h.addSentinel("Killjoy","Turret","Lockdown",7) print("==========") print(h.printAllSentinels())	***OUTPUT:*** ========== Agent Raze added ========== Total Duelists: 1 Duelist 1 Agent Name:Raze Default ability:Paint shells Ultimate: SHOWSTOPPER Required ultimate points: 8 ========== Agent Phoenix added ========== Total Duelists: 2 Duelist 1 Agent Name:Raze Default ability:Paint shells Ultimate: SHOWSTOPPER Required ultimate points: 8 Duelist 2 Agent Name:Phoenix Default ability:Hot hands Ultimate: Run it back Required ultimate points: 6 ========== Agent Sage added ========== Total Sentinels: 1 Sentinel 1 Agent Name:Sage Default ability:Healing ORB Ultimate: Resurrection Required ultimate points: 8 ========== Agent Killjoy added ========== Total Sentinels: 2 Sentinel 1 Agent Name:Sage Default ability:Healing ORB Ultimate: Resurrection

	Required ultimate points: 8 Sentinel 2 Agent Name:Killjoy Default ability:Turret Ultimate: Lockdown Required ultimate points: 7