**Class Extraction and Attributes**

Stage 1. Concise problem definition – describe the software product in single paragraph.

* Students have a name, ID, password, registered courses (3 – 4), exam scores (3) in each course, and GPA. They can only log into their account as a student and are allowed to view their details without making changes to other classmate records, then log off.
* Administrators have a name, ID, and password. They can log into the LMS as an admin, can add, delete, insert, modify, or browse records, check GPA of any student(s), and finally log off.

Stage 2. Identify the nouns

* Students have a name, ID, password, registered courses (3 – 4), exam scores (3) in each course, and GPA. They can only log into their account as a student and are allowed to view their record without making changes to other classmate records, then log off.
* Administrators have a name, ID, and password. They can log into the LMS as an administrator, can add, delete, insert, modify, or browse records, check GPA of any student(s), and finally log off.

Nouns

1. Students, ~~name, ID, password~~, registered courses (3 – 4), ~~exam scores (3) in each course~~, ~~GPA~~, ~~account~~, ~~student record~~, administrator, ~~LMS~~
2. Nouns to exclude
   1. Attributes: name, ID, password, exam scores, GPA, account
      1. Account could be like Boolean: isStudent = true or isAdministrator = true
   2. LMS is like main()
   3. Student Record is stored into a text file and transferred to a data structure (array?)

Candidate classes

* Student, administrator

Subclasses

* Course (3 – 4)

**First iteration of class diagram**





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| --- |
| Student |
| name  ID  password  Course(s)  GPA  account (type = Boolean?) |
| Student()  Student(name, ID, password, Course(s), GPA, account)  login()  logoff()  viewRecord() |

|  |
| --- |
| Administrator |
| name  ID  password  account (type = Boolean?) |
| Administrator()  Administrator(name, ID, password, account)  login()  logoff()  addRecord()  deleteRecord()  insertRecord()  modifyRecord()  browseRecord()  checkGPA() |

|  |
| --- |
| Course |
| Course name  Exam1  Exam2  Exam3 |
| Course()  Course(name, e1, e2, e3) |

