Documentation

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# Work Division

Reese: Main Code

Brian: Group Manager / UI Code

Connor: Documentation / Design / GUI Code

Armando: Edits to Main Class

# OOP Explanation

**Polymorphism**: Student and Instructor both have inherited methods of the same name, but are overridden and behave differently.

**Encapsulation**: Frequent use of setters and getters that interact with private variables and public methods to hide the variables from outside sources.

**Inheritance**: Student and Instructor classes both inherit the Person class and it’s members.

**Abstraction**: There is complexity abstraction from the user with the console user interface and the graphic user interface.

# TODO: Class Designs

## Person

Basic person class to be utilized by Instructor and Student.

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| --- | --- |
| **Variable** | **Purpose** |
| private String name  private String email | Private variables |

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| --- | --- |
| **Method or Constructor** | **Purpose** |
| public Person(String name, String email) | Constructor |
| public void setName(String name)  public void setEmail(String email) | Setters |
| public String getName()  public String getEmail() | Getters |
| public printDetails() | Print to Console |

## Instructor extends Person

Inherits basic Person class and handles/stores instructors.

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| **Variable** | **Purpose** |
| private String courseName | Private variable |

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| **Method or Constructor** | **Purpose** |
| public Instructor(String name, String email, String courseName) | Constructor |
| public String setCourseName(String courseName) | Setter |
| public String getCourseName() | Getter |
| public void printDetails() | Print to Console |

## Student extends Person

Inherits basic Person class and handles/stores students.

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| **Variable** | **Purpose** |
| private String studentID | Private variable |
| private ArrayList assignments | Hold student’s assignments |

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| **Method or Constructor** | **Purpose** |
| public Student(String name, String email, String studentID) | Constructor |
| public void setID(String studentID)  public void addAssignment(String assignmentName, int score, int maxScore) | Setter / Mutator |
| public String getID()  public ArrayList getAssignmnets()  public Assignment getAssignment(String assignmentName) | Getters |
| public void printDetails() | Print to Console |

## Grade

Calculates and stores students’ grades.

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| **Variable** | **Purpose** |
| private int grade | Private variables |

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| **Method or Constructor** | **Purpose** |
| public void setGrade(int grade) | Setters |
| public int getGrade()  public String getLetterGrade(Arraylist assignments)  public void getClassGrades() | Getters |

## Course

For handling and storing course information.

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| **Variable** | **Purpose** |
| private String courseName  private String roomNumber  private String meetTime  private String instructor  priate String schedule  private ArrayList roster | Private variables |

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| **Method or Constructor** | **Purpose** |
| public Course(String courseName, String roomNumber, String meetTime, String instructor, String schedule) | Constructor |
| public void setCourseName(String courseName)  public void setRoomNumber(String roomNumber)  public void setMeetTime(String meetTime) public void setInstructor(String instructor)  public void setSchedule(String schedule)  public void setRoster(ArrayList roster)  public void addStudent(Student student) | Setters |
| public String getCourseName()  public String getRoomNumber()  public String getMeetTime()  public String getInstructor()  public String getSchedule()  public ArrayList getRoster() | Getters |
| public void printStudentRoster()  public void printDetails() | Print to console |

## Assignment

For handling and storing assignment information.

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| **Variable** | **Purpose** |
| private String assignmentName  private int score  private int maxScore | Private variables |

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| **Method or Constructor** | **Purpose** |
| public Assignment(String assignmentName, int score, int maxScore) | Constructor |
| public void setAssignmentName(String assignmentName)  public void setScore(int score) | Setters |
| public String getAssignmentName()  public int getMaxScore()  public int getScore() | Getters |
| public void printDetails() | Print to console |

## Manager

For handling interaction between classes and storing objects.

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| **Variable** | **Purpose** |
| private ArrayList students  private ArrayList instructors  private ArrayList courses  private Random random | Private variables |

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| **Method or Constructor** | **Purpose** |
| public void addStudent(String email, String name, String studentID)  public void getStudentGrade(String studentID)  public ArrayList getStudentIDs()  public void enrollStudent(String studentID, String courseName)  public Student getStudent(String studentID) | Manage Students |
| public void addInstructor(String email, String name, String courseName)  public Instructor getInstructor(String name) | Manage Instructors |
| public void addCourse(String courseName, String roomNumber, String meetTime, String instructor, String schedule)  public Course getCourse(String name) | Manage Courses |
| public void addAssignment(String courseName, String assignmentName, int maxScore) | Manage Assignments |
| public String getExportFolder()  public String getExportFilename()  public String getInstructorExportFilePath()  public String getStuExportFilePath(Student student)  public void exportInstructorData(Instructor instructor)  public void exportStudentData(Student student) | Manage Exporting |
| public void printStudents()  public void printStudentIDs()  public void printInstructors()  public void printInstructorNames()  public void printCourses()  public void printCourseNames() | Print to Console |

## User Interface (Console)

Interact with the user via the console and the program via manager.

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| **Variable** | **Purpose** |
| private Manager manager  private Scanner scanner | Private variables |

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| **Method or Constructor** | **Purpose** |
| public UserInterface(Manager manager) | Constructor |
| public void startApp()  private void printWelcomeMessage()  private void printLoginScreen()  private void printGoodbyeMessage() | Startup / Exit |
| private void printInstructorMenu()  private void instructorMainMenuLoop()  private void manageInstructorsMenu()  private void manageInstructors() | Instructor |
| private void printStudentMenu()  private void studentMainMenuLoop(Student student)  private void manageStudentsMenu()  private void manageStudents()  private void gradeSummary(Student student)  private void changeStudentName(Student student)  private void changeStudentEmail(Student student) | Student |
| private void manageAssignmentsMenu()  private void manageAssignments() | Assignment |
| private void manageCoursesMenu()  private void manageCourses() | Courses |
| private void exportInstructorData()  private void exportStudentData(Student student) | Exporting |
| private int readIntInput(String prompt)  private String readStringInput(String prompt)  private void waitForEnter() | Utility |

## TODO: GUI (Graphic User Interface)

Interact with the user via a GUI and the program via manager.

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| **Variable** | **Purpose** |
| private int grade | Private variables |

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| **Method or Constructor** | **Purpose** |
|  | Setters |
|  | Getters |