Assignment 2: Individual Design

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**CLASSES, ATTRIBUTES and OPERATIONS:**

Class #1: Course <Online courses can be offered in a variety of formats…>

* Course ID attr: <Each course must have a distinct Course ID >
* Title attr: <Each course must have…, along with the Course Title >
* Description attr: <Each course must have …, along with … Description>
* Time Offered attr: <… courses might only be offered during certain times>
* Prerequisite attr: <…have one or more other prerequisite courses, must pass the prerequisite before can take the course>

Class #2: Course Catalog< …select courses from the most current Course Catalog>

* Update() op: <…be able to update our courses>
* Create() op: <…creation of new courses, …>
* Remove() op: <… occasional removal of existing courses>

Class #3: Member

* UUID attr: < …will also have a single UUID to distinguish…>
* Names attr: <… names, addresses and phone numbers at a minimum>
* Address attr: <… names, addresses and phone numbers at a minimum>
* Phone Number attr: <… names, addresses and phone numbers at a minimum>

Class #4: Instructor <These courses must be …managed by qualified instructors.>

* Skills attr: <…where each instructor has the skills and competencies to…>

Class #5: Hired Instructor < …a list of instructors who have been hired>

* Term attr: <For each term, a list of instructors who have been hired>
* Year attr:
* Create course() op: < These courses must be created, taught and managed by …>
* Teach course() op: < These courses must be created, taught and managed by …>
* Mange course() op: < These courses must be created, taught and managed by …>
* Select course() op: <Each instructor will select one of their eligible courses to teach>
* Enter records() op: <…be able to enter new academic records and update previously created records>
* Update records() op: <…be able to enter new academic records and update previously created records>

Class #6: Student < Each student will have a “UUID” >

* Request enrollment() op: < …allow students to request enrollment in certain courses>
* Request disenrollment() op: < … and to request disenrollment as needed >
* Take courses() op: < …take a wide variety of courses >
* Retake course() op:< …students might want to retake a course >
* Select courses() op: < …select courses from the most current Course Catalog>

Class #7: Working Student < …will have a significant number of working students>

* Job & Position attr: <…most appropriate for their current job/position…>
* Goals attr: <…most appropriate for their … and future goals>
* Interests attr: <…best fit their interests and skill requirements…>
* Work Schedule attr: <… students can take courses as their work schedule>

Class #8 Record < For each course that is taken by a student, an academic record …>

* Student UUID attr: < For each course that is taken by a student…>
* Term attr
* Year attr
* CourseID & Session attr: < … performance during that session of the course>
* Comments attr: < Each record with comments …>
* Link attr: < …should also include a link to the instructor >

Class #9 Historical Record <…system must be able to maintain historical records >

* Student UUID attr: < …maintain the historical records for all of these students >

Class #10 Session <… the student’s performance during that session of the course >

* Session ID attr
* Term attr
* Year attr
* Course ID
* Instructor ID: <the UUID of the Instructor>
* Seats Available attr: < …determine the total number of available seats…>
* Seats Assigned attr: <… students who have already been assigned a seat>
* Update Seats() op: <This operation can be used to change seats available and/or seats assigned>

**RELATIONSHIPS:**

Relationships #1 (Association class): Take: association between Course and Student <Their students will be given the opportunity to take a wide variety of courses>

* Term attr: < … the term and year must also be maintained >
* Year attr: < … the term and year must also be maintained >
* Letter grade attr: < The student’s performance … by a final letter grade>
* Session attr: < …student’s performance during that session of the course >

Relationships #2 (Association class): Teach: association between Course and Instructor < Each instructor will select one of their eligible courses to teach during the term>

* Term attr:
* Year attr:

Relationships #3 (Association class): Course request: association between Student and Course <… …keep track of student course requests …>

* Type attr: < request enrollment …and to request disenrollment as needed>
* Approved enrollment attr: <Working student is permitted to take 1, 2 or 3 courses>
* Grant() op: < …keep track of student course requests that are granted or refused>
* Refuse() op: < …keep track of student course requests …refused>
* Track() op: < …keep track of student course requests>

Relationships #4: Manage: association between Hired Instructor and Record < Instructors must be able to enter new academic records and update>

Relationships #5 Generalization between Instructor and Member < Instructor is a type of Member>

Relationships #6 Generalization between Student and Member <Student is a type of Member>

Relationships #7 Generalization between Working Student and Student <Working Student is a special case of Student>

Relationships #8 Generalization between Hired Instructor and Instructor < Hired Instructor is a special case of Instructor>

Relationships #9 Aggregation between Student and Historical Record <A student has a historical record>

Relationships #10 Aggregation between Instructor and Course <A class has one or multiple instructors>

Relationships #11 Aggregation between Student and Course <A class has many Students>

Relationships #12 Composition between Record and Historical Record <Historical Record is a collection of Records>

Relationships #13 Composition between Course and Course Catalog < Course Catalog is a collection of Course >

Relationships #14 Composition between Session and Course < A Course has one or more sessions>

Relationships#15 Generate: association between Association Class “Take” and Record <A student taking a course can generate a Record >

Relationships#16 Generate: association between Association Class “Teach” and Session <An Instructor teaching a course can generate a Session >