# Overview of the Assignment:

This assignment will go through steps to develop a data warehouse design.

# Part 1 – Review the business requirements

*MyBU* is an app designed to support college students in course enrollment and advising services.

*MyBU* would like to introduce data warehousing and analytics to build their business. You have been hired as a data architect to create an initial Constellation data warehouse design. On the next page is *MyBU* relational OLTP data model. In addition, they would like to correlate the tour data with weather data to see if there are trends from weather which might impact tours.

***MyBU* OLTP Data Model on next page**

*MyBU* **OLTP Data Model**

A diagram of a computer

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**External Blackboard data** is to come via an API Here is a sample JSON API response to give you a sense of the data returned:

|  |  |
| --- | --- |
| {  "StudentID": "67890",  "StudentName": "Jane Smith",  "EnrollmentInfo": [  {  "CourseID": "ENG303",  "CourseName": "Advanced English Literature",  "Semester": "Fall 2024",  "AcademicActivities": [  {  "Type": "Essay",  "ActivityID": "E1",  "Title": "Analysis of Shakespeare's Works",  "DueDate": "2024-09-20",  "SubmissionDate": "2024-09-19",  "Grade": "A"  },  {  "Type": "Group Project",  "ActivityID": "GP1",  "Title": "Literary Movements Presentation",  "GroupMembers": ["Alice Brown", "Mark Lee"],  "DueDate": "2024-10-15",  "SubmissionDate": "2024-10-14",  "Grade": "A-"  },  {  "Type": "Final Exam",  "ActivityID": "FE1",  "Title": "Comprehensive Literature Exam",  "Date": "2024-12-10",  "Grade": "B+"  }  ],  "OverallGrade": "A-"  },  {  "CourseID": "BIO220",  "CourseName": "Genetics",  "Semester": "Fall 2024",  "AcademicActivities": [  {  "Type": "Lab Report",  "ActivityID": "LR1",  "Title": "Mendelian Inheritance",  "DueDate": "2024-09-25",  "SubmissionDate": "2024-09-24",  "Grade": "B"  }, | {  "Type": "Research Paper",  "ActivityID": "RP1",  "Title": "Genetic Mutations and Their Effects",  "DueDate": "2024-11-01",  "SubmissionDate": "2024-10-31",  "Grade": "A"  },  {  "Type": "Midterm Exam",  "ActivityID": "ME1",  "Title": "Genetics Midterm",  "Date": "2024-10-18",  "Grade": "B+"  }  ],  "OverallGrade": "B+"  },  {  "CourseID": "CS150",  "CourseName": "Introduction to Programming",  "Semester": "Fall 2024",  "AcademicActivities": [  {  "Type": "Coding Assignment",  "ActivityID": "CA1",  "Title": "Basic Algorithms",  "DueDate": "2024-09-10",  "SubmissionDate": "2024-09-09",  "Grade": "A-"  },  {  "Type": "Individual Project",  "ActivityID": "IP1",  "Title": "Developing a Simple Calculator",  "DueDate": "2024-10-05",  "SubmissionDate": "2024-10-04",  "Grade": "A"  },  {  "Type": "Final Project",  "ActivityID": "FP1",  "Title": "Building a To-Do List App",  "DueDate": "2024-12-15",  "SubmissionDate": "2024-12-14",  "Grade": "A+"  }  ],  "OverallGrade": "A"  }  ]  } |

## Part 1 – Business Rules

1. Determine four business questions your data warehouse design will answer. Keep these questions in mind as you move on to the rest of the assignment. One of the questions needs to consider some sort of correlation with external weather data.

**Your response of four business questions goes here**

## Part 2 – Design a constellation schema warehouse

1. Create and insert an ERD showing the **constellation** ERD schema below. Requirements are as follows:
2. Determine four to five (non-date/time) SCDs - make sure to include at least one type 2 and one type 3
3. Determine two to three date dimensions of different grains, consider a role-playing or bitemporal date dimensions. You will use table in question 2b to outline the facts and explain your design choice for the temporal dimensions
4. Determine two to three fact tables, your design should include at least one Snapshot (transactional) fact, and at least one cumulative fact.

**Your dimensional model design goes here**

1. Questions on Dimensions
   1. For EACH non-date/time SCD use the following table explain your SCD design

|  |  |  |
| --- | --- | --- |
| **Table Name and Screenshot** | **SCD Type** | **Design explanation** |
|  |  |  |
|  |  |  |
|  |  |  |

* 1. Outline the fact tables which contain role-playing or bitemporal design

|  |  |  |
| --- | --- | --- |
| **Table Name and Screenshot** | **Temporal Type** | **Design explanation** |
|  |  |  |
|  |  |  |
|  |  |  |

1. Questions on Fact tables
   1. **Question** For each of your business questions in part 1, how are the measures tied to your questions? Highlight the dimensions, facts and measures involved.

|  |  |
| --- | --- |
| **Question 1:** | |
| **Screenshot of tables answering question** | **How measures are tied to your question** |
|  |  |
| **Question 2:** | |
| **Screenshot of tables answering question** | **How measures are tied to your question** |
|  |  |
| **Question 3:** | |
| **Screenshot of tables answering question** | **How measures are tied to your question** |
|  |  |
| **Question 4:** | |
| **Screenshot of tables answering question** | **How measures are tied to your question** |
|  |  |

* 1. **Question:** Outline the fact tables and explain why they are cumulative or snapshot

|  |  |  |
| --- | --- | --- |
| **Table Name and Screenshot** | **Fact Type** | **Design explanation** |
|  |  |  |
|  |  |  |
|  |  |  |

* 1. **Question:** Which attributes in the OLTP schema will transform to measures and what measures can be derived/calculated that should be included?

|  |  |  |
| --- | --- | --- |
| **Table and Attribute name from OLTP** | **Fact and Measure name** | **How is it transformed** |
|  |  |  |

## Part 3 – Assumptions/Appendix (optional)

You may need to make some assumptions in order to work on this assignment. Clearly state any assumptions you needed to make here, along with your reasoning why the assumption was appropriate (one or two sentences should be sufficient in most cases). Do not remove any functionality, or trivialize, any of the assignment requirements. Feel free to augment.

Use the **Ask the Teaching Team Discussion Forum** if you have any questions regarding the how to approach this assignment.

Save your assignment as ***lastnameFirstname\_assign2\_0.docx*** and submit it in the *Assignments* section of the course.

For help uploading files please refer to the *Technical Support* page in the syllabus.

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