

# CS 314 Domain Modeling Pre-Class Assignment

## Pre-Class Tasks:

1. Complete pre-class readings. (Estimated time: 10 min)
2. Complete the pre-class preparation. (Estimated time: 30 min)
3. Take the on-line quiz (Domain Modeling) before 11:55pm on Thurs April 14. You may take the quiz multiple times.

## Overview

This pre-class work is meant to help you complete the following user stories:

- As a student in CS 314, I want to understand what Domain Modeling is so that I can decide why and when domain models are useful.
- As a student in CS 314, I want to understand how Domain Modeling fits into an Agile development process so that I can understand how they can be used in Agile processes.
- As a student in CS 314, I want to understand how to create domain models so that I can practice creating them from text descriptions of problem statements.

## Pre-Class Reading:

- Domain modeling in the 'CS314SP2016-DomainModeling.pdf' file.

## Pre-Class Preparation:

Consider the following problem statement:

①A system is to be built that will provide automated support for undergraduate advising for many departments across CSU.

②An important component of this system is a student worksheet, which will be used to keep track of course information- courses students have taken (with grades and credit hours earned), are currently enrolled in, and plan to take.

③The system will support information retrieval and updating activities associated with student worksheets.

④The system will allow advisors to do the following:

1. ⑤Create, destroy, and update student worksheets.
2. ⑥Generate reports of the student's grade point average and progress towards fulfilling graduation requirements.

⑦ The system will allow students to do the following:

1. ⑧Generate reports of the student's grade point average and progress towards fulfilling graduation requirements..

⑨The system must keep a history of who modified a worksheet and when.

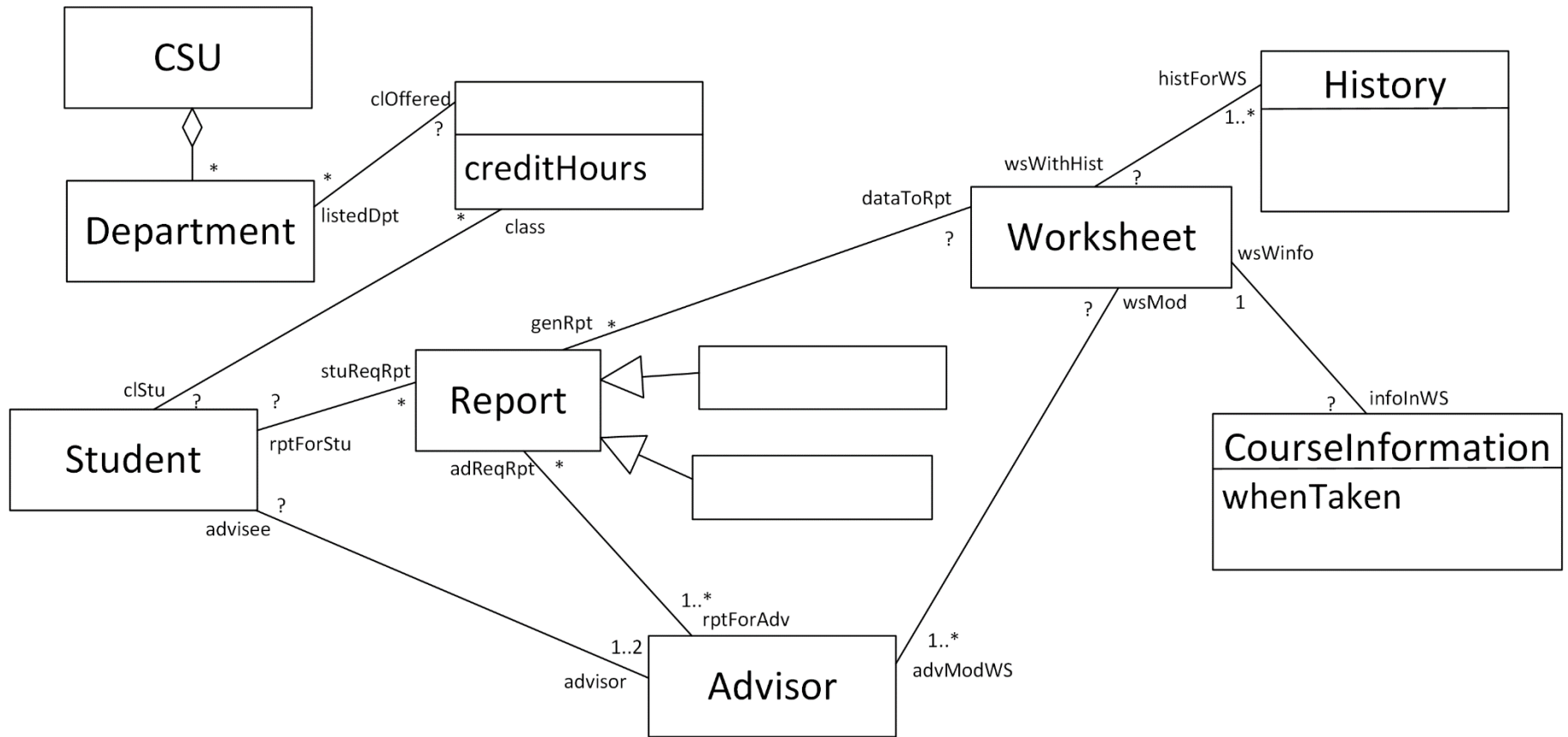
**Use the method outlined in the pre-work reading slides to create a domain model for this problem statement as follows. The sentences in the problem statement are numbered, and the items listed in each step show which sentence contains them. For some of these, you need to figure out what the item is that goes in the step. For example, in #1, if all you saw was '④ ?', you would need to add 'Advisor'.**

1. Decide which nouns in the problem statement refer to people performing some action.
  - ② Student
  - ④ Advisor

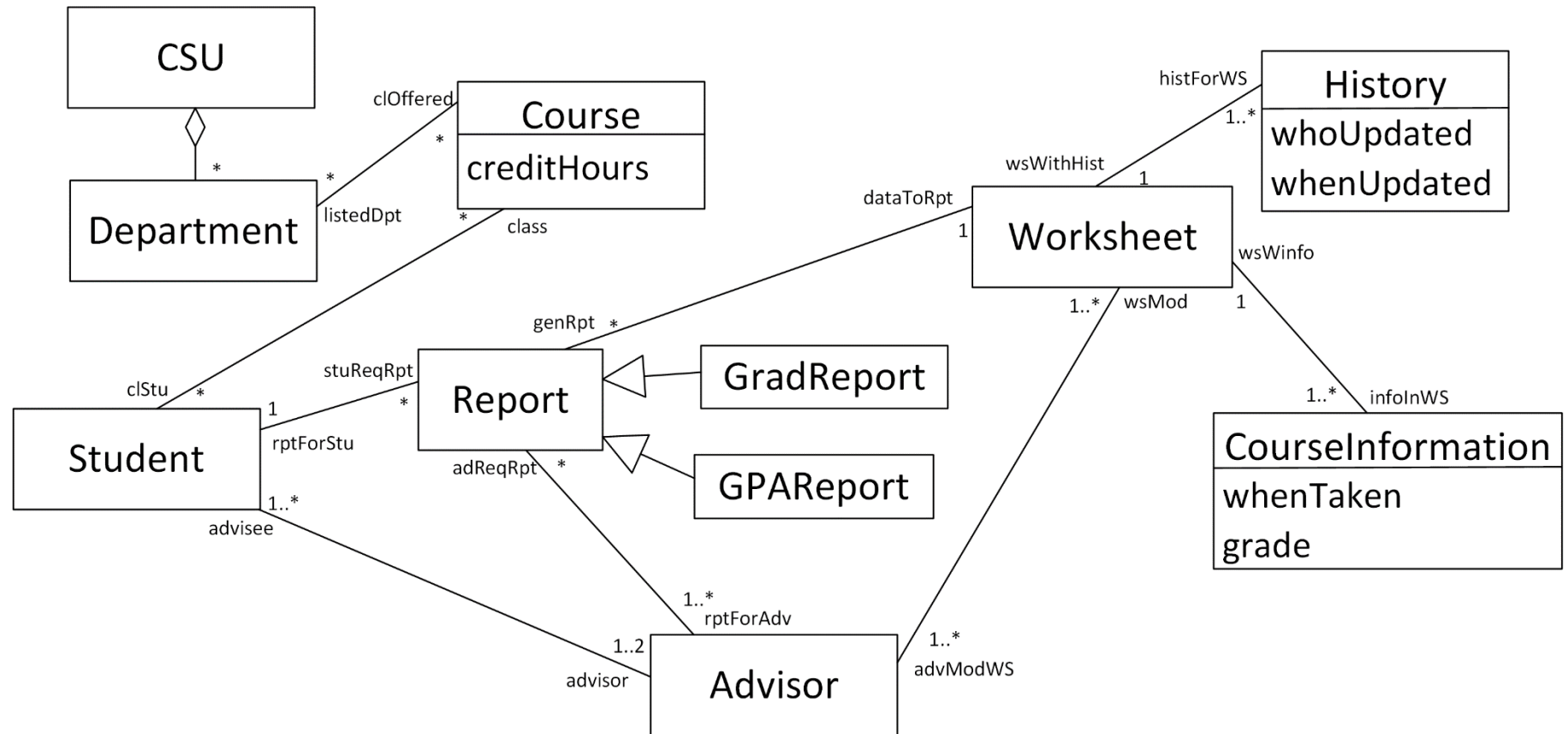
2. Decide which other nouns are simple types that may represent attributes of key domain concepts.
  - ② Grade, Credit hours, Taken/Currently taking/Plan to take
  - ⑨ Who modified, when modified
3. Decide which other nouns may be classes. The system is not included in a domain model because it is not part of the problem domain – it is part of a solution.
  - ① ?, CSU
  - ② Worksheet, Course information, Course
  - ⑥⑧ Graduation fulfillment report (GradReport)
  - ⑥⑧ GPA report
  - ⑨ ?
4. Decide which verbs may be methods.
  - ① Undergraduate advising
  - ③ Retrieve, Update
  - ⑤ Create worksheet, Destroy worksheet, ?
  - ⑥⑧ Generate GPA
  - ⑥⑧ Generate graduation fulfillment report
  - ⑨ Keep history
5. Decide which verbs may be classes – that is, they retain state.
  - ① Maybe Undergraduate advising (UGAdvising) – let's ignore this for now

**Would you add any other items to the results from steps 1-5?**

**Use the information in steps 1-5, including the items you had to add in place of '?', to complete the UML classes and attributes in the figure on the next page. Then think about the multiplicities that are not shown in the diagram (these also have a '?' where they should go). Decide what the multiplicities need to be and add them.**



Finally, you can compare your solution to the partial domain model with the one below.



**The in-class activity** is to develop a domain model for the following problem statement:

RamPark Inc. has been contracted to develop a system for the parking garages at the Ram's new stadium. Drivers can enter with a CSU ID that can be swiped in a card reader. They also have the option of getting a ticket by pressing a button at the entrance. The ticket has the date and time stamp of entering the garage. The system to be developed keeps track of the number of cars currently in the garage and displays a sign showing whether the garage is full or not. Drivers who have tickets can pay the attendant at the gate before leaving the garage. Those who have CSU IDs swipe the card in a card reader at the gate. The system must keep track of the payments being made. It also must provide summaries to authorized personnel regarding the peak garage hours and the number of permits used.

1. Think about how you will develop the domain model, using the information from the pre-reading slides.