

Project Deliverable 1

Unified Modeling Language (UML)

Points —50 points

This assignment must be done by each student individually. ***No collaboration is allowed.***

Submission Instructions:

The Software tool recommended for this assignment is Astah (<http://astah.net/>), however you can use any tool to create UML diagrams (such as ArgoUML, StarUML, Microsoft Visio, etc.). Export your diagrams as pictures for your submission.

Submit the following: yourASURiteID-ProjectDeliverable1.zip
(e.g., skbansa2-ProjectDeliverable1.zip)

This compressed folder should contain the following files:

1. Use Case Diagram (Image File)
 2. Text/Word document containing use case description of any two use cases from your Use case diagram
 3. Class Diagram (Image File)
 4. Activity Diagram (Image File)
 5. State Diagram (Image File)
-

ARENA Game System:

ARENA is a multi-user, Web-based system for organizing and conducting tournaments. ARENA is game independent in the sense that organizers can adapt a new game to the ARENA game interface, upload it to the ARENA server, and immediately announce and conduct tournaments with players and spectators located anywhere on the Internet. Organizers can also define new tournament styles, describing how players are mapped to a set of matches and how to compute an overall ranking of players by adding up their victories and losses (hence, figuring out who won the tournament). To recoup their operational costs, organizers can also invite potential sponsors to display advertisement banners during games.¹

¹ Bruegge, B., and A. H. Dutoit. "Object-Oriented Software Engineering: Using UML, Patterns and Java.", 3rd edition, Prentice Hall, 2009.

1. Use-Case Diagram (15 points)

Part A: Identify Actors and Use Cases for the Arena Game System. Draw the Use Case Diagram that details the high-level functionality of the system. *Make sure to have includes and extends relationships between use cases where relevant.*

Part B: Pick any 2 use cases from your diagram and provide the complete textual use case description of the use case (i.e., participants, entry and exit conditions, the main flow of events, any exceptional flow of events, and special requirements).

2. Class Diagram (15 points)

Create a class diagram for the Arena Game System based on your use-case diagram that embodies the primary classes. This should be a high-level class diagram with the important objects and their relationships. *Make sure to include properties and behavior (high-level) for the classes. Also provide relationships/associations between classes along with the multiplicity. For special associations indicate if it is an aggregation, composition, or inheritance. Show at least one instance of inheritance association.*

3. Activity Diagram (10 points)

Create an activity diagram for the scenario described below:

A new user registers with the Arena system as an organizer and then uploads a new *Checkers* game. Next the organizer announces and organizes a tournament with players. The organizer also solicits advertisers and accepts applications received. Accepted advertisers are then allowed to place their banners during the game. When a tournament ends the organizers announces the results. *Make sure to use split and synchronize constructs of activity diagram and organize activities into suitable lanes.*

4. State Diagram (10 points)

Identify all possible states for a *Checkers Game* object and create a state diagram for it. *Make sure to include valid states and transitions between states labeled by triggers/events. Also indicate the start state and end state.*
