

Tangram(Block Puzzle) Design

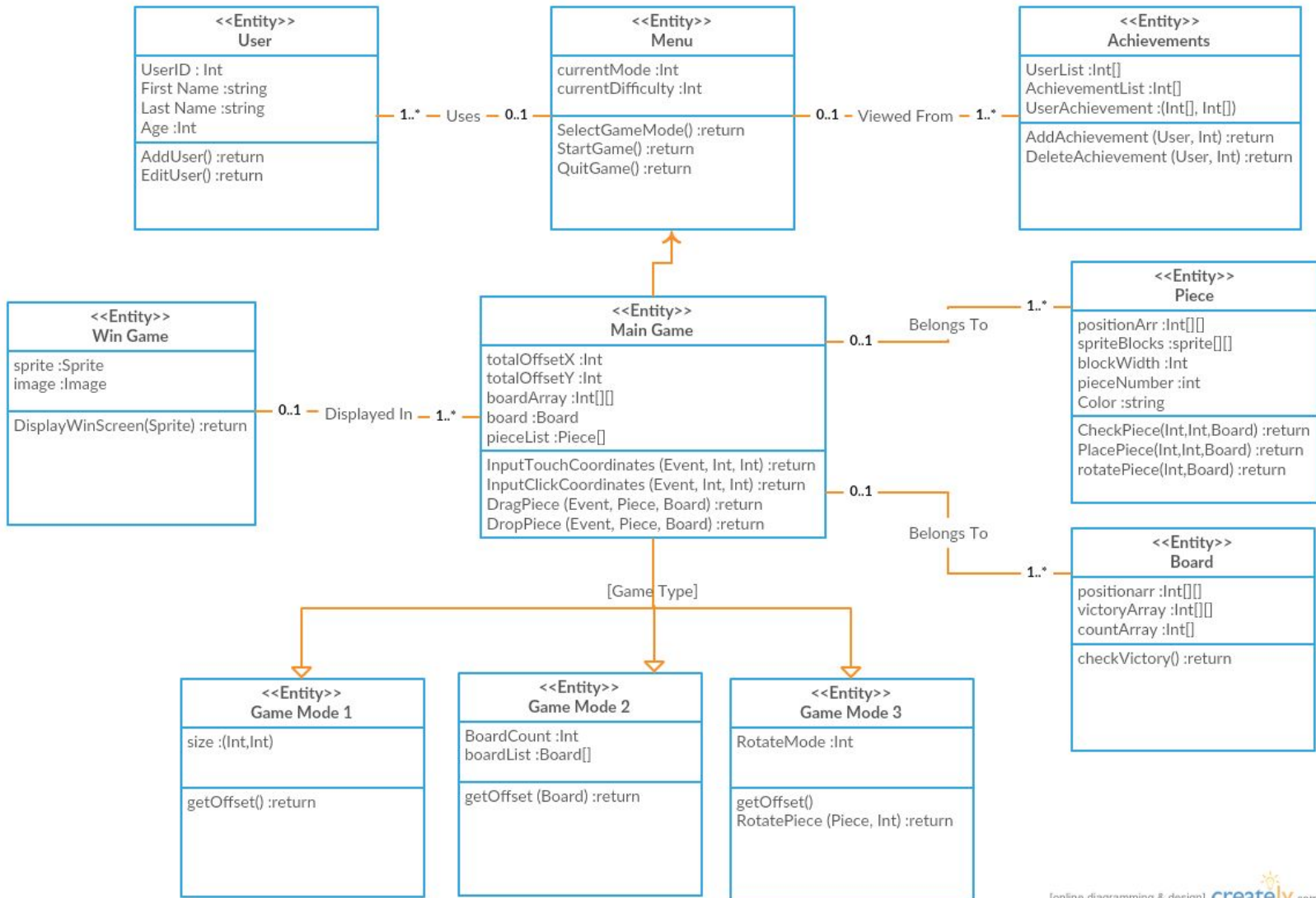
Team:16 Vishal Batchu, Raghuram Vadapalli, Nikhil Tadigoppula, Syamantak Das.

Design Model:

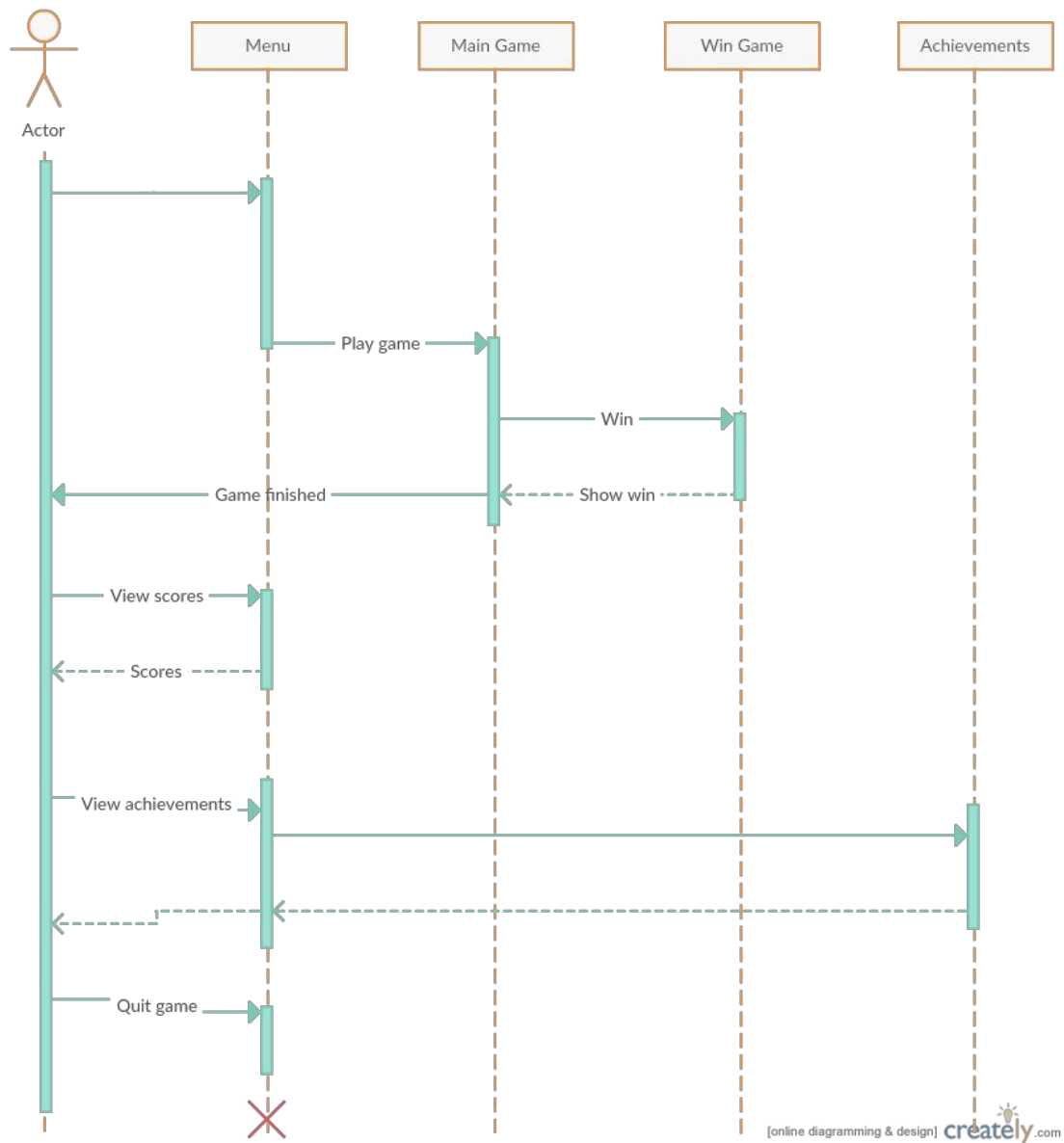
User	<p>Class State:</p> <ul style="list-style-type: none">• UserID : Int• First Name :string• Last Name :string• Age :Int <p>Class Behaviour:</p> <ul style="list-style-type: none">• AddUser() :return• EditUser() :return
Piece	<p>Class State:</p> <ul style="list-style-type: none">• positionArr :Int[][]• spriteBlocks :sprite[][]• blockWidth :Int• pieceNumber :int• Color :string <p>Class Behaviour:</p> <ul style="list-style-type: none">• CheckPiece(Int,Int,Board) :return• PlacePiece(Int,Int,Board) :return• rotatePiece(Int,Board) :return
Board	<p>Class State:</p> <ul style="list-style-type: none">• positionarr :Int[][]• victoryArray :Int[][]• countArray :Int[] <p>Class Behaviour:</p> <ul style="list-style-type: none">• checkVictory() :return
Menu	<p>Class State:</p> <ul style="list-style-type: none">• currentMode :Int• currentDifficulty :Int <p>Class Behaviour:</p> <ul style="list-style-type: none">• SelectGameMode() :return• StartGame() :return• QuitGame() :return
Main Game	<p>Class State:</p> <ul style="list-style-type: none">• totalOffsetX :Int• totalOffsetY :Int• boardArray :Int[][]• board :Board• pieceList :Piece[]

	<p>Class Behaviour:</p> <ul style="list-style-type: none"> • InputTouchCoordinates (Event, Int, Int) :return • InputClickCoordinates (Event, Int, Int) :return • DragPiece (Event, Piece, Board) :return • DropPiece (Event, Piece, Board) :return
Game Mode 1	<p>Class State:</p> <ul style="list-style-type: none"> • size :(Int,Int) <p>Class Behaviour:</p> <ul style="list-style-type: none"> • getOffset() :return
Game Mode 2	<p>Class State:</p> <ul style="list-style-type: none"> • BoardCount :Int • boardList :Board[] <p>Class Behaviour:</p> <ul style="list-style-type: none"> • getOffset (Board) :return
Game Mode 3	<p>Class State:</p> <ul style="list-style-type: none"> • RotateMode :Int <p>Class Behaviour:</p> <ul style="list-style-type: none"> • getOffset() • RotatePiece (Piece, Int) :return
Win Game	<p>Class State:</p> <ul style="list-style-type: none"> • sprite :Sprite • image :Image <p>Class Behaviour:</p> <ul style="list-style-type: none"> • DisplayWinScreen(Sprite) :return
Achievements	<p>Class State:</p> <ul style="list-style-type: none"> • UserList :Int[] • AchievementList :Int[] • UserAchievement :(Int[], Int[]) <p>Class Behaviour:</p> <ul style="list-style-type: none"> • AddAchievement (User, Int) :return • DeleteAchievement (User, Int) :return

Design Diagram (Class Diagram):



Sequence Diagram(s): (Using the Main Menu, Game, Win game and Achievements classes)



Design Rationale:

1. Created Win Game class since it was not that related to stay within the Main Game class. We wanted to be able to change the score display/image on a win without editing the main game class so we moved it.
2. Initially Achievements were handled by the Menu class, but we separated it out into a separate class since we didn't want Menu to do everything for us but just point us to the class which can handle the "Display" and "Addition" of achievements.
3. Game Mode1, Game Mode2 and Game Mode3 were initially all in the same class, we then wanted to make them separate in case we ever need to modify just one mode of the game so we used a Main Game class from which the 3 modes inherited from.
4. We will be adding more details to individual users and their preferred modes/difficulties etc.