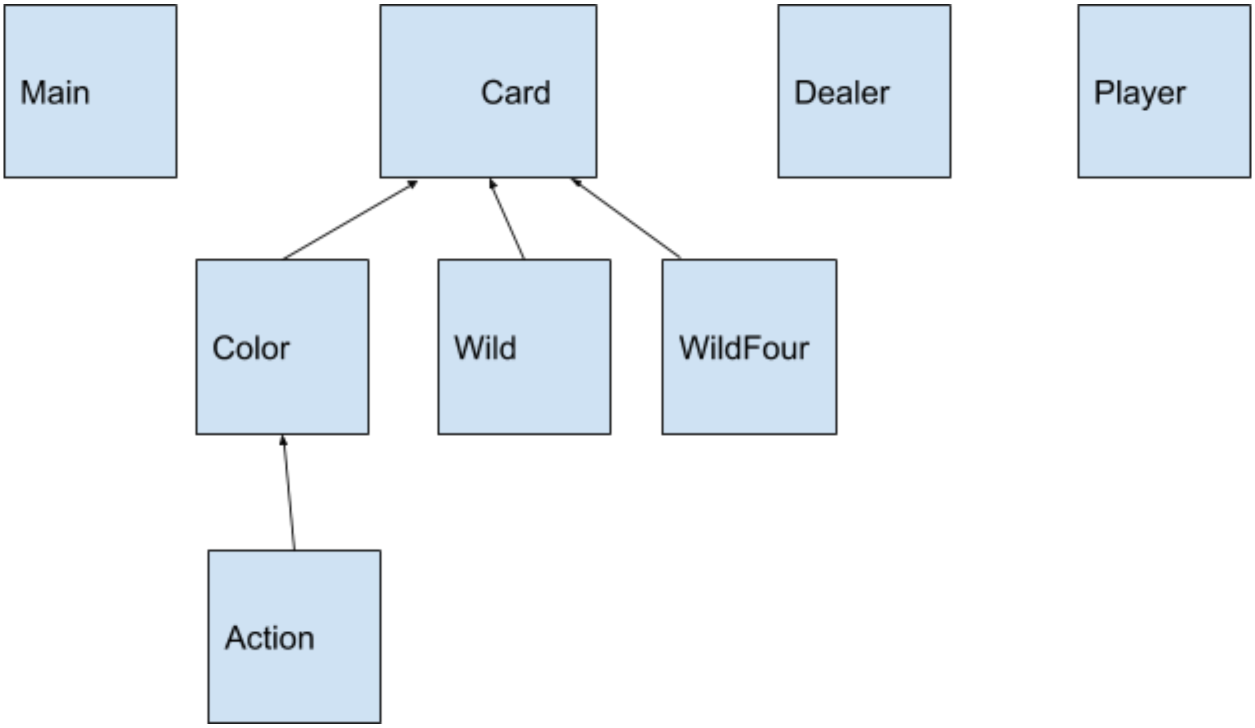
UNO

1. You will implement a game of UNO.
2. You will start by implementing the following class hierarchies:



The following are the classes that need to be implemented.

Class	Description	Functionality
Main	Main class. Creates a Dealer object and instructs it to perform certain functions: Initialize, Shuffle,Deal, Play..	● Creates Dealer object. ● Handles flow control and termination criteria.
Dealer	Handles user interactions and runs the game: initializes array of players, initializes deck of cards, shuffles the cards, deals cards to the player, draws the cards from the draw pile, analyzes outcome of each play, manages the direction of the play, allows user to stop the game.	Must use the following data structures: ● ArrayList<Card> drawPile; ● ArrayList<Card> discardPile; ● Player[] player (this possibly can be ArrayList as well)

		Must implement the following methods: ● initialize() - initializes the deck of cards and players. ● shuffle() - shuffles the cards. ● play() - returns false to stop or true if the game is won. ● deal() - deals cards to the players and starts the discard pile. ● analyze(Card) - analyzes the situation based on the card played by one of the players. ● displayDrawPile() ● displayDiscardPile() ● score(). When one of the players runs out of cards, calculate the points.
Card	Encapsulates the functionality of a single UNO card. Superclass.	● Maintains the value of a card ● Implements toString() method
Color	Extends Card	● Maintains the color as an instance variable. This can be an integer or enumerated data type. ● Implements toString() method
Action	Extends Color Implements the Action Card Functionality	● Maintains the type as an instance variable. This can be an integer or enumerated data type. Types are SKIP, REVERSE, DRAWTWO. ● Implements toString() method.
Wild	Extends Card	● Implements toString() method.
WildFour	Extends Card	● Implements the

		toString() method.
Player	Encapsulates the functionality of a single player.	● Must use ArrayList<Card> to store its hand. ● Instance variable to store player’s name ● Instance variable to store player’s score. Must implement the following methods: ● add(Card). Adds a given card to the hand. ● play(Card). Card on the top of the discard pile is passed in as a parameter. Returns a Card played. If null is returned, the player needs to draw the card from the draw pile. ● done() - returns true if the player is out of cards and false otherwise.

Timeline:

Due date	Deliverable
April 6 (Deliverable 1)	1. All classes created 2. Dealer object has the following methods implemented: initializer(), shuffle(), displayDrawPile(), displayDiscardPile().
April 20 (Deliverable 2)	1. Dealer object has the following methods implemented: deal(), play(). 2. Player object is implemented.
May 4 (Deliverable 3)	1. Dealer object has analyze() and score() functionality implemented.
May 18 (Final Deliverable)	Project completed.