# CSSE 220

More interfaces

More recursion

More fun?

Import *RecursiveHelperFunctions* and *BettingInterfaces* from the repo

# Exercise time

- Solve the sumArray function recursively
  - It's in the *RecursiveHelperFunctions* project
- You can work with friends, but each of you should get the code working on your own computer

# Recursive Helper Functions – What, When, Why, How?

- What:
  - A recursive function that is called by another (non-recursive) function
  - The non-recursive function (the caller) doesn't do much
- When:
  - Additional parameters are needed
    - Often the initial function you're given is not in the ideal form for a recursive solution
  - Return values need to be updated

# Recursive Helper Functions – What, When, Why, How?

- Why:
  - Makes function called by external code cleaner/easier to use
    - Does not rely on caller to understand how to initialize the information for the helper
  - Easier to understand by breaking problem down to smaller pieces
- How:
  - Methods named coolFunction & coolFunctionHelper
    - 90% of the code is in coolFunctionHelper

# RecursiveHelperFunctions

- Solve the remaining problems
  - **all the problems will require you to create a recursive helper function**
- You can work with a friend but make sure both of you write the code

# Memoization

- Save every solution we find to sub-problems
- Before recursively computing a solution:
  - Look it up
  - If found, use it
  - Otherwise do the recursive computation
- Study the memoization code in the RecursiveHelperFunctions project

# What if the recursive call isn’t in the return?

- Let’s start the quiz problem together, then you can finish it on your own.

# BettingInterfaces

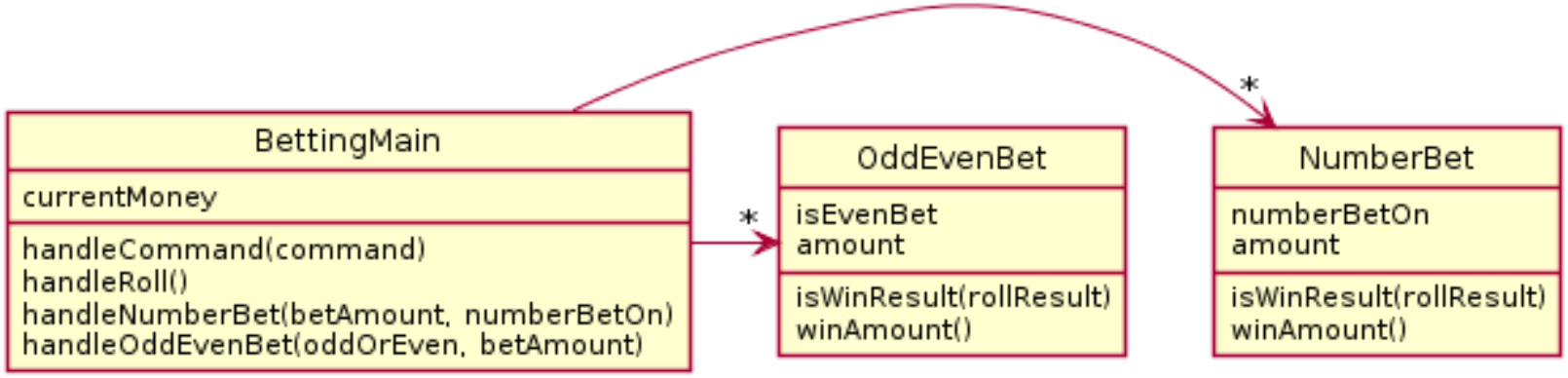
- Get in groups of 2-3…no one working alone
- Understand the given code, the duplication, plus the additional features you will be adding. Look at 3 TODOs in BettingMain.
- Design a solution for all 3 TODOs using interfaces and make a UML diagram describing it
- Get myself or a TA to check out your UML
- Once we sign off – start coding
  - You only need 1 computer for this one.
  - I recommend you do each TODO one by one rather than doing everything in one go

# UML as it currently stands

- What do you need to add?
- What do the Bet classes have in common?

# UML as it currently stands

- What do you need to add?
- What do the Bet classes have in common?



# Hints

1) Your interface will likely be called Bet
2) You should have 3 classes implementing Bet, one for each of the current types of bets in the code, one for the new one you're being asked to implement
3) You'll need to update the lists in main to a single ArrayList<Bet> (or some other storage method to main)