1. All possible topics/questions from midterm one are possible topics for midterm 2.
2. Who uses UML diagrams, and why?  
   1. Unified Modeling Language (UML)
   2. Used by team members to quickly and effectively display information to
      1. Scrum Masters
      2. Product Owners
      3. Other teams/team members who can join onto the project
      4. Anyone who may want to understand what the code is doing
   3. This is to easily show features and attributes of the product to the client/customer/anyone on the project who would like to know the features of the product in ways they can understand
      1. An easier way to read/understand the code without having to look at the code itself
3. List and explain the components of a sequence diagram.  
   1. Object Window – the subject matter that will be on the screen   
      (Ex: in the estuary game you most likely have a fish or trash on screen, this will be considered an object)
   2. Lifeline – a vertical dotted line that represents the timeframe in which the object exists
   3. Time – the general timeframe the entire code is running
   4. Activation Bar – displayed as a box (varies in length) that represents the duration of the execution message
   5. Call/Return – represented by an arrow, sends a message from the beginning of the sender’s activation bar to the receiver’s lifeline
4. What is a storyboard? Why is important that it be simply drawn on paper?  
   1. A storyboard is an outline of the project
      1. Used in agile to help developers understand what needs to be finished
   2. It should be drawn on paper so that the product owners (client) does not become fixed on a false perception of what the product will look like through digital art, rather they will understand that it is all conceptual and subject to change in development
5. What is the difference between overriding and overloading? How do they relate (or not) to object-oriented programming?   
   1. Override
      1. Changes behavior at runtime
         1. Can allow a subclass to provide specific implementation of a method that is already provided by one of its superclasses
      2. Polymorphic
      3. Same Signatures
   2. Overload
      1. Adds to the behavior at compile time
         1. Re-writing the same method multiple times with different parameters within the same class; therefore, allowing a class to have more than one method with the same name, even if the parameters are different
      2. NOT Polymorphic
      3. Different Signatures
6. Write a short code example to demonstrate overriding.

Implicit Example:

**public** String toString(){

**return** name;

}

Explicit Example:

@Override

**public** **int** hashCode() {

**return** name.hashCode();

}

1. Write a short code example to demonstrate overloading.

**class** Dog {

**public** **void** bark() {

System.***out***.println("woof");}

}

**class** Hound **extends** Dog{

**public** **void** bark() {

System.***out***.println("bowl");}

}

1. What code controls whether members of a class are considered duplicates by a hashed data structure? Write an example with working methods.
   1. Within the HashSet, hashCode and equals can be used to determine duplicates

**public** **class** Cat2{

String name;

**public** Cat2(String n) {

name = n;

}

**public** String toString(){

**return** name;

}

@Override

**public** **int** hashCode() {

**return** name.hashCode();

}

@Override

**public** **boolean** equals(Object other) {

**return** **this**.name.equals(((Cat2) other).name);

}

}

1. Explain the order in which equals() and hashCode are called(). Given a series of adds, predict their usage.

hashCode will be called upon first to determine if the two objects have the same int values. If they do, then equals will be called upon.

1. Write the methods hashCode and equals, using good software practices.  
   For each of the following artifacts, 1) describe it, 2) say who produces it, 3) say how it is used.
   1. (10 pts) Product backlog

* An ordered list, which consists of an aggregation of stories that are broken down into tasks
* It is able to be used to calculate the ROI (return on investment) of a product
* This is maintained by the Product Owner
  1. (10 pts) Sprint backlog
* Consists of stories/tasks for 1 sprint (roughly 2 weeks)
* This is produced/used by the Team Members
* Used to determine what tasks need to be done in a sprint and can be used to assist in calculations for estimating when the final product is complete
  1. (10 pts) Task Board
* A board that displays what the team members are working on (“doing”), what they have completed (“done”), and what they need to start (“to do”) for anyone who enters the room to view
* This can be used to monitor the overall progress of a project, determining if a team is making meaningful progress and estimations
* Although this is maintained and generally created by Team Members, it is monitored by the Scrum Master to ensure the team is working effectively/efficiently, able to be used by the Product Owner to see the progress of their product/investment, and generally anyone who wishes to know the progress of the product  
  1. (10 pts) What is the first (of 12) principle of Agile development? How does that compare to Waterfall? Explain briefly.   
     1. The first principle states “Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.”
        1. Customer is always right. Satisfy them through early/continuous delivery of valuable software
     2. Other important information…
        1. Working Software > Documentation
        2. Responding to Change > Sticking to the Plan
        3. People > Process and Tools
        4. Business people and Tech people must work together daily
     3. The above gives power of decision-making to the workers
  2. (10 pts) Who is responsible for estimating the time for a job? What is the motivation to estimate accurately?
     1. Team Members are responsible for this
     2. The ROI (return on investment) is the motivation for accurate time estimates
  3. (8 pts) Describe four different types of meetings that happen during a sprint cycle.
     1. Scrum
        1. Daily, 15 minute meeting that discusses the task board (to do’s, in progress, done)
        2. Meeting takes place standing up to ensure a brief meeting
     2. Sprint Backlog
        1. Short meeting with the client to show them everything completed thus far
           1. Nothing more, nothing less
     3. Sprint Retrospective
        1. Team reflection that’s facilitated by the scrum master
        2. Team comes up with 1-2 things they want to do differently for the next sprint
     4. Sprint Planning
        1. Discusses what you are going to be working on during the next sprint cycle