UML Class Diagram:

ComputerLab

String name;
LinkedList<Computer> computers;

<<Abstract>>
Computer

String name;
String OS;

<<Interface>>
IUpgrade

boolean timeToUpgrade();

(0...50)

<<Abstract>>
MobileDevice

double batteryLife;

MobileDevice checkOut(int id){...}

Desktop

int numScreens;

boolean timeToUpgrade() {...}

Laptop

boolean timeToUpgrade() {…}
void changeLidClose(int behavior)

Tablet

boolean hasStylus;

B19 Midterm Exam Answer Key and Rubric

RUBRIC (35 points):

- IUpgrade interface (4 points)
  - interface
  - timeToUpgrade() method
  - return type boolean
  - takes in no parameters
- Computer class (4 points)
  - Abstract
  - String field (name)
  - String field (OS)
  - ~~double field (hard drive size)~~ (Free point)
- MobileDevice class (6 points)
  - Abstract
  - extends Computer
  - double or int field (for battery life)
  - checkOut() method
  - checkOut() takes an int or String
  - checkOut() returns a MobileDevice
- Laptop class (7 points)
  - Concrete
  - extends MobileDevice
  - implements IUpgrade
  - timeToUpgrade() method that matches interface signature
  - changeLidCLose() method
  - changeLidCLose() takes in an int
  - changeLidCLose() returns void
- Tablet class (4 points)
  - Concrete
  - Extends MobileDevice
  - boolean field (hasStylus)
  - does NOT implement IUpgrade
- Desktop class (5 points)
  - Concrete
  - Extends Computer
  - Implements IUpgrade
  - int field (number of screens)
  - timeToUpgrade() method that matches interface signature
- ComputerLab class (5 points)
  - Concrete
  - String field (lab name)
  - LinkedList<Computer> field
  - Line indicating that ComputerLab contains Computer
  - "(0...50)" notation with line

Additional Notes:
- -5 For not using proper UML Diagram
- -5 Computer and MobileDevice are combined into one class
- Do not count a line if it is missing an arrow or the arrow is in the wrong direction, unless the line is accompanied by a word such as "implements" or "extends". However, do not deduct points for using wrong line type (ex. solid vs dashed).
- Acceptable if prefix "Abs" is used for abstract classes and "I" for interfaces.
- Do not deduct points for forgetting {...} at the end of methods.
- Acceptable if students create a second interface with a checkOut method and have Laptop and Tablet implement it

B19 Midterm Exam Answer Key and Rubric

2a. Hello World!

2b. gamma alpha

2c. 9

2d. I pounce! Circle of Life!
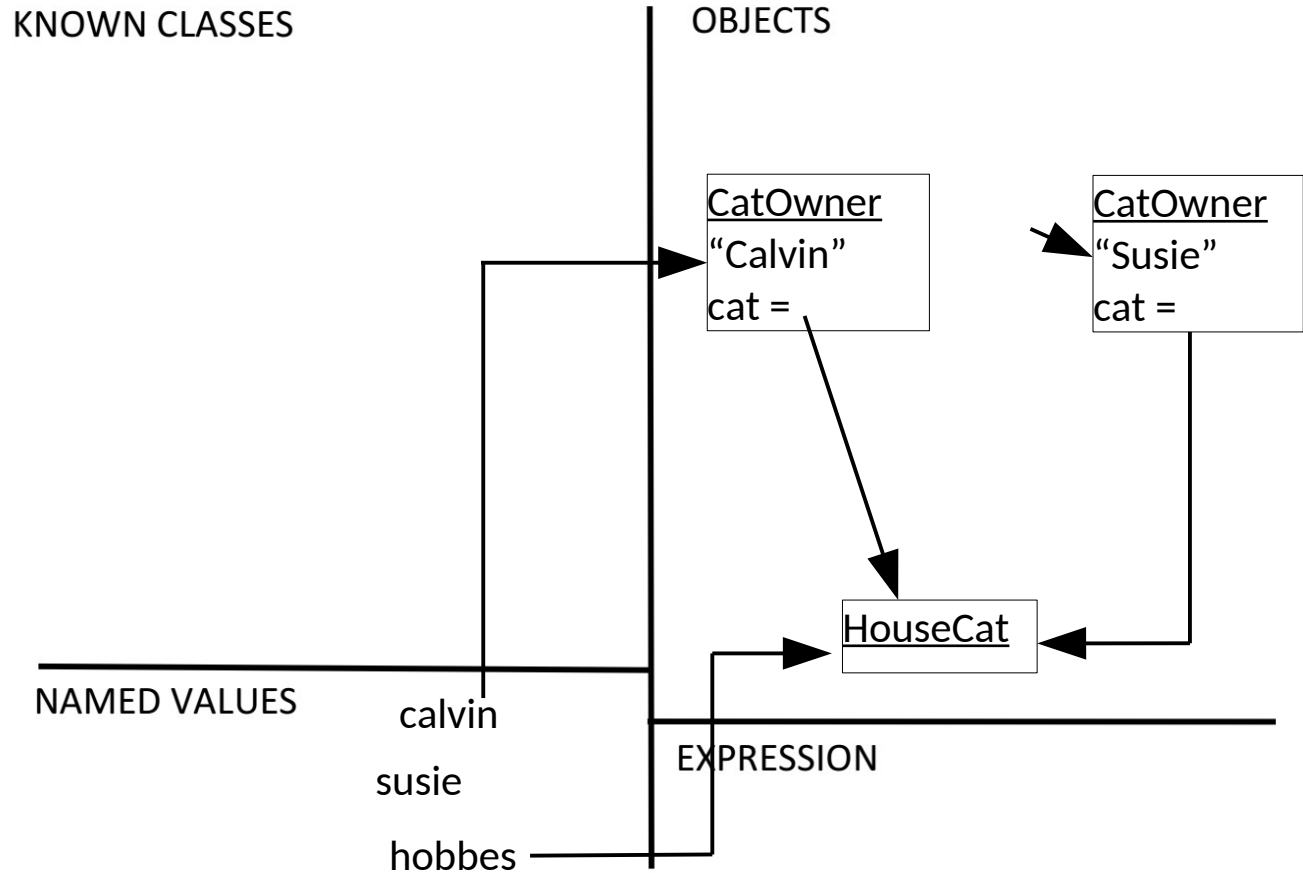
2e. TRUE

2f. ERROR

RUBRIC (30 points):
5 points each, all or nothing.

Do not deduct points for the following:
- extra use of (or failure to use) newlines or spaces
- capitalization differences
- minor punctuation differences
- minor spelling errors
- use of quotation marks
- providing extra information

3.

KNOWN CLASSES   OBJECTS

CatOwner
"Calvin"
cat =

CatOwner
"Susie"
cat =

HouseCat

NAMED VALUES

calvin

susie   EXPRESSION

hobbes

RUBRIC (15 pts):
+3 calvin, susie, hobbes in Named Value quadrant (+1 each)
+3 calvin, susie, hobbes each point to appropriate object (+1 each)
+3 correct objects in Object quadrant (+1 each)
+2 correct name value in each CatOwner object (+1 each)
+4 each CatOwner object points to HouseCat object (+2 each)
        - do not deduct points for not writing field names

4a. Yes. In the first loop, we filter out the grocery items that are not yet expired and have not been on the shelf for more than 7 days.

Definition: Cleaning is when we remove the data we don't want from a data set.

4b. Yes. In the second loop, we separate the expired items out into produce, meat/dairy, and other.

Definition: Parsing is when we separate out the data in a data set into distinct categories.

RUBRIC (for each):
+5 for correctly answering yes.
If correct answer, +5 for correct explanation. +2 if they simply copied over content from the outline, but it's the correct content.
If incorrect answer, +5 for correct definition.
Half credit if the explanation or definition is on the right track but too vague or contains incorrect information.