Critters Project Part I

1. Contributors
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2. Stages
    a. Stage 1
        i. makeCritter – located in the Critter class, creates the Critter of a specified Critter type and adds to a population list
            1. The population list is maintained throughout the simulation. It will hold each of the active critter objects.
            2. Default Class Values
                a. Position will be set randomly using the x-y coordinate system
                b. Default energy will be set using the constant value in Param class
                c. Will throw an invalid exception for invalid class names
        ii. Time Step
            1. World time step
                a. Will be applied to every active critter in the population list
                b. Will call individual critter's doTImeStep
            2. Do time step
                a. Individual do time steps will determine individual fight response
                b. Reproduction decisions
                c. Movement behavior
            3. Walk
                a. Walking direction is determined by an integer ranging from 0 to 7- with each walk there is a set parameter to deduct it
                    i. 0 will be East, 1 will be Northeast, 2 will be North, 3 will be Northwest, 4 will be West, 5 will be Southwest, 6 will be South, and 7 will be Southeast
            4. Population list update
                a. Will go through the list checking for 0-energy critters and remove those critters from the list
        iii. View Component – located in Critter class, creates a visual representation for the console of the Critter world with its current active occupants
            1. A boarder containing the specified width and length of the world will be created for the console
                a. Outputs the one char representation for the critter occupying the space
        iv. Controller Component
            1. Quit
                a. Using the keyboard scanner object when quit is detected it will terminate the program
            2. Show
                a. Calls the Critter.displayWorld() method

3. Step
    a. Calls a World Time Step on all the active Critters

b. Stage 2
    i. Time Step
        1. Reproduction limitations are defined
        2. List of babies is populated to keep from birth to straight fight
    ii. Do Time Steps
        1. Individual fight decisions and reactions completed
        2. Moves are made
        3. Reproduction may occur
    iii. Algae and Test critters
        1. Test critters are created
        2. Algae do not move but will have resting energy subtracted
            a. Will not fight, means of food
            b. A fixed parameter number of algae are added to the world at each world time step
    iv. Control component
        1. Seed input
            a. To set the seed for the random number generator

c. Stage 3
    i. Walking and Running
        1. In each World Time Step Critter will only walk once
        2. Appropriate movement energy costs applied
    ii. Fight
        1. When two critters are on the same spot fight sequence will engage
            a. Winner is determined by the random generated integer ranging from 0 to the energy level of the critter. The higher roll will be the winter
            b. The loser will die and half of its energy will be applied to the winner's energy.
    iii. Controller Component
        1. Stats
            a. When the user prompts stats for a particular class the method for that class will be invoked.
    iv. Exceptions and Errors
        1. Applied appropriate try/catch blocks for commands throwing exceptions and output error messages

3. Project components
    a. Main
    b. Critters
    c. Craig
    d. Yoshi

e. Ruca
f. Stego
g. Params
h. Algae
i. SuperAlgae