# UML Activity

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| Warren |
| - MAX\_RABBITS\_IN\_WARREN = 99- RabbitCount = RabbitCount- PeriodsRun = 0- AlreadySpread = False- Variability = Variability- Rabbits = [] |
| + New (Variability, RabbitCount)+ GetRabbitCount()+ NeedToCreateNewWarren()+ WarrenHasDiedOut()+ AdvanceGeneration(ShowDetail)+ EatRabbits(, RabbitsToEat)+ Inspect()+ ListRabbits()- CalculateRandomValue(BaseValue, Variability)- KillByOtherFactors(ShowDetail)- AgeRabbits(ShowDetail)- MateRabbits(ShowDetail)- CompressRabbitList(DeathCount)- ContainsMales() |

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| Rabbit |
| - DEFAULT\_LIFE\_SPAN = 4- DEFAULT\_PROBABILITY\_DEATH\_OTHER\_CAUSES = 0.05- ReproductionRate - Gender |
| + New (Variability, ParentsReproductionRate)+ Inspect()+ IsFemale()+ GetReproductionRate() |

**Rabbits and Foxes**

UML class diagram

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| <<enumeration>>Genders |
| + Male+ Female |

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| Animal |
| # NaturalLifespan# ProbabilityOfDeathOtherCauses# IsAlive = True# ID# Age = 0# Animal.\_ID (class variable) |
| + New (AvgLifespan, AvgProbabilityOfDeathOtherCauses, Variability)+ CalculateNewAge()+ CheckIfDead()+ Inspect()+ CheckIfKilledByOtherFactor()# CalculateRandomValue(BaseValue, Variability) |

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| Location |
| + Fox+ Warren |
| + New () |

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| Simulation |
| ViewRabbits = “”TimePeriod = 0WarrenCount = 0FoxCount = 0ShowDetail = FalseLandscapeSizeVariabilityFixedInitialLocationsLandscape[] |
| InputCoordinate(CoordinateName)AdvanceTimePeriod()CreateLandscapeAndAnimals(InitialWarrenCount, InitialFoxCount, FixedInitialLocations)CreateNewWarren()CreateNewFox()FoxesEatRabbitsInWarren(WarrenX, WarrenY)DistanceBetween(x1, y1, x2, y2)DrawLandscape() |

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| Simulation |
| - ViewRabbits = ""1- TimePeriod = 0- WarrenCount = 0- FoxCount = 0- ShowDetail = False- LandscapeSize- Variability- FixedInitialLocations- Landscape = [] |
| + New (LandscapeSize, InitialWarrenCount, InitialFoxCount, Variability, FixedInitialLocations)- InputCoordinate(CoordinateName)- AdvanceTimePeriod()- CreateLandscapeAndAnimals(InitialWarrenCount, InitialFoxCount, FixedInitialLocations)- CreateNewWarren()- CreateNewFox()- FoxesEatRabbitsInWarren(WarrenX, WarrenY)- DistanceBetween(x1, y1, x2, y2)- DrawLandscape() |

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| Fox |
| - DEFAULT\_LIFE\_SPAN = 7- DEFAULT\_PROBABILITY\_DEATH\_OTHER\_CAUSES = 0.1- FoodUnitsNeeded- FoodUnitsConsumedThisPeriod = 0 |
| + New (Variability)+AdvanceGeneration(ShowDetail)+ResetFoodConsumed()+ReproduceThisPeriod()+GiveFood(FoodUnits)+Inspect() |

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