# 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 = 0  WarrenCount = 0  FoxCount = 0  ShowDetail = False  LandscapeSize  Variability  FixedInitialLocations  Landscape[] |
| 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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