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HW 3

1. ExpDecay futurequantity
2. Futurequantity(double t)
3. Double newLambda;
4. If initial >= 10000
5. newLambda = lambda \* 1.10
6. else
7. newLambda = lambda
8. Double quantity = initial \* Math.pow(Math.exp(1.0),(-newLambda) \* t)
9. Return quantity

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| Test Case | Sample Data | Expected Result | Tested? |
| Initial < 10000 | Lambda = 1, initial = 1000 | Amount at time = 1 : 367.879441 | yes |
| Initial = 10000 | Lambda = 1, initial = 10000 | Amount at time = 1 : 3328.710837 | yes |
| Initial > 10000 | Lambda = 1, initial = 20000 | Amount at time = 1: 6657.421674 | yes |

1. InvestCalc futurevalue
2. Futurevalue()
3. Double newRate;
4. If principal >= 10000
5. newRate = interestRate + 0.005
6. Else
7. newRate = interestRate
8. Double fv = principal \* Math.pow(1 + newRate, year)
9. Return fv

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| Test Case | Sample Data | Expected Result | Tested? |
| Principal < 10000 | InterestRate = .01  Principal = 1000 | Value after 1 year: 1010 | Yes |
| Principal = 10000 | interestRate = .01  principal = 10000 | Value after 1 year: 10150 | Yes |
| Principal > 10000 | InterestRate = .01  Principal = 20000 | Value after 1 year: 20300 | yes |

1. Leap and animal year
2. animalYear()
3. Int test = (year – 1900) % 12
4. string animal
5. if test == 11
6. Animal = boar
7. Else if test == 10
8. Animal = dog
9. Else if test == 9
10. Animal = rooster
11. Else if test == 8
12. Animal = monkey
13. Else if test == 7
14. Animal = ram
15. Else if test == 6
16. Animal = horse
17. Else if test == 5
18. Animal = snake
19. Else if test == 4
20. Animal = dragon
21. Else if test == 3
22. Animal = rabbit
23. Else if test == 2
24. Animal = tiger
25. Else if test == 1
26. Animal = ox
27. Else
28. Animal = rat
29. Return “Year of the “ + animal
30. leapYear()
31. int test = year % 4
32. Int test2 = year % 100
33. Int test3 = year % 400
34. Boolean leap
35. If test3 == 0
36. Leap = true
37. Else If test2 == 0
38. Leap = false
39. Else If test == 0
40. Leap = true
41. Else
42. Leap = false
43. Return leap
44. Public static void main(String[] args)
45. Make date objects with 2001, 2004, 1900, 2400 years
46. Print if those years are leap years
47. Ask user for birthday
48. Print if their birthday year is a leap year
49. Create date objects with different years to test each animal
50. Print the animal for each year and the users birth year

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| Test Case Leap year | Expected Result | Tested |
| Not leap(not divisible by 4) | 2001 leap year? False | yes |
| Leap(divisible 4, not 100) | 2004 leap year? true | yes |
| Not leap(divisible 4 and 100, not 400) | 1900 leap year? false | yes |
| Leap(divisible by 4, 100, and 400) | 2400 leap year? true | yes |
| My birth year | 2000 leap year? true | yes |

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| Test case for Chinese new year | Expected result | Tested |
| This year | 2018 Year of the Dog | Yes |
| Birth year | 2000 Year of the Dragon | Yes |
| Ox | 2008 year of the rat | Yes |
| Tiger | 1997 year of the ox | Yes |
| Rabbit | 1962 year of the tiger | Yes |
| Snake | 1987 year of the rabbit | Yes |
| Horse | 2013 year of the snake | Yes |
| Ram | 2014 year of the horse | Yes |
| Monkey | 1991 year of the ram | Yes |
| Rooster | 1968 year of the monkey | Yes |
| Dog | 1981 year of the rooster | Yes |
| Boar | 1995 year of the boar | yes |