Problem 1 - 8 pts

Happy Chinese New Year! Every year on the lunar calendar is associated with a certain animal which follows the following cycle


For example 1984 was the year of the rat and as the cycle repeats every 12 years so are the years 1996, 1972, etc.

The following code should take in a year and should return the number corresponding to the associated zodiac. For example zodiac( 1984 ) should return 1. The function as written however may or may not contains bugs. If so point out all the bugs and correct them so the function behaves as expected. If not write "no bugs".

```python
function zodiac( year )
    reference = 1984 % 12
    yearindex = year % 12 + 1
    if yearindex > reference
        return yearindex - reference
    else
        return yearindex + 8
    end
end
```

The problem here is really that % is base 10, but the answer should be base 1, like Julia array.

Add 1 to yearindex fixes it!
Problem 2 - 12 Points

A given year is a leap year if it is divisible by 4 but not by 100 or if it is divisible by 400.

1. (8 pts) Write a Julia function `isLeapYear(year)` that takes in a year as an argument and returns true if it is a leap year and false otherwise.

2. (4 pts) Using the function `isLeapYear`, write some Julia code that prints out all leap years from the year 2022 to 2100. (You can receive full credit for this part even if your function `isLeapYear` is not entirely correct)

```julia
1) function isLeapYear(year):
    if year % 400 == 0
        return true
    elseif year % 4 == 0 && year % 100 != 0
        return true
    else
        return false
    end
end

2) for year = 2022:2100
    if isLeapYear(year)
        println(year)
    end
end
```