1. Write a function in JavaScript that takes an integer as a parameter and returns the number of 1s in the binary representation of that number (without converting the number to a binary string). As a bonus you can make it a recursive function.

1. You have a SQL database with the following two tables:  
     
   Customers

|  |
| --- |
| id |
| name |

Orders

|  |
| --- |
| id |
| customer\_id |
| item\_name |

Write SQL queries to return the following information:

* 1. The number of orders made by each customer.
  2. The list of all customers who have three or more orders.
  3. The list of all customers who have ordered the item named “test item”.
  4. The list of all customers who have NOT ordered the item named “test item”.

1. Create a simple app using Objective-C that should do the following:
   1. Make a request to: <https://jsonplaceholder.typicode.com/photos>
   2. Display thumbnail versions of the images in the returned JSON. Images should be loaded asynchronously. Do not use any third party libraries.
   3. If a thumbnail is tapped it should switch to another view to show the full size image.
   4. Cache all of the images locally based on their ID.
2. You have a file on disk called birthdays.json which contains the following data:  
   {

“Albert Einstein”: “03/14/1879”,

“Benjamin Franklin”: “01/17/1706”,

“Ada Lovelace”: “12/10/1815”,

“Donald Trump”: “06/14/1946”,

“Rowan Atkinson”: “01/6/1955”

}

Create a program in the back-end language of your choice that loads that JSON file from disk, extract the months of all the birthdays, and count how many people have a birthday in each month. Your program should output something like:

{

"May": 3,

"November": 2,

"December": 1

}