Part 1: Multiple choice questions (25%)
These are in a separate quiz on Canvas.

Part 2: ArrayList
Implement the following two functions in the class ArrayList.

- **(15%)** ***insert(value, index)***
  - Inserts ***value*** into the ArrayList at the position ***index***.
  - Doesn't lose any of the values that are already in the ArrayList
  - If index is too low or too high ***do nothing***
  - The implementation must be able to handle *any number of subsequent calls* to ***append***, ***insert*** and ***prepend*** without running out of "space".
- **(10%)** ***count_instances(value)***
  - Returns how many items in the list have the value ***value***.

Part 3: Recursion
Implement the following two functions using recursive programming.

- **(15%)** ***is_divisible(a, b)*** (deilanlegt)
  - Returns True if the non-negative integer ***a*** can be divided by the non-negative integer ***b*** without fractions (án afgangs)
  - Use only +, -, ==, < and/or >
  - No number is divisible by 0
  - 0 is divisible by all integers
- **(10%)** ***count_matches(lis)***
  - Returns how many matches are in the list lis
  - A match is when two items of the same value are side by side in the list.
    - Count only for one of the two
      - There is only ***one*** match in **[3,4,5,5,6]**
    - Count again for a third instance
      - There are ***two*** matches in **[3,4,4,4,5]**
      - There are ***three*** matches in **[4,5,5,5,5,6]**
      - There are ***two*** matches in **[4,5,5,6,7,7]**

Part 4: General Programming

Implement the classes **Book** and **Library**. In this part of the exam, you are allowed to use any built-in python operations.

(10%) Book

This class must have the following functions:

- **get_isbn()**
  - Returns the book's ISBN number
- **get_name()**
  - Returns the book's name
- **set_isbn(ISBN)**
  - Updates the book's ISBN number with the value in ISBN
- **set_name(name)**
  - Updates the book's name with the value in name
- **__str__()**
  - The format of the string should be: (<ISBN>: <name>)
  - Example: a book with **ISBN="12345"** and **name="my book"**
  - (12345: my book)

(15%) Library

This class must have the following functions:

- **add_book(ISBN, name)**
  - Add a book to the library with the ISBN number, name and page count provided
  - If a book already has this ISBN, overwrite it
- **get_book(ISBN)**
  - If a book with this ISBN number is in the library
    - return an instance of the class Book with the corresponding information
  - Otherwise return None
- **change_book(ISBN, new_name)**
  - If a book with this ISBN number is in the library, change its name to new_name
    - Otherwise do nothing
- **remove_book(ISBN)**
  - If a book with this ISBN number is in the library, remove it from the library
    - Otherwise do nothing
- **__str__()**
  - Returns the string representation of each book, with a newline character between them.
    - The order of the books doesn't matter
  - Example: a library with 3 books
  - (12345: fellowship of the ring)
    (23456: the two towers)
    (34567: return of the king)