

General Information & Communication Technology I (350101) Fall 2015

Assignment 2: Data Structures & Web Documents – Given Sep. 18., Due Sep. 28. –

Problem 2.1 (Binary Number Conversion)

Write a python function `binary` that converts decimal numbers into binary strings and an inverse `decimal` that converts binary strings into decimal numbers. 20pt

Use the built-in type `int` as a representation for decimal numbers and the type `str` for binary numbers. Do not use the built-in functions `bin` and `int`, but program the conversion algorithm explicitly.

Problem 2.2 Write a python function `romval` that computes the integer value roman numerals. 20pt
For instance `romval('MDCCLIX')` should return `1759`.

Note: We recap the symbol/value relation for reference.

Symbol	≐	Value	Symbol	≐	Value
I	≐	1	V	≐	5
X	≐	10	L	≐	50
C	≐	100	D	≐	500
M	≐	1,000		≐	

Problem 2.3 (Recognizing Vowels)

Write a function that takes a character (i.e. a string of length 1) and returns `True` if it is a vowel, `False` otherwise. 10pt

Problem 2.4 Write a regular expression that recognizes roman numerals up to 3999 (i.e. `MMMCMXCIX`). 25pt
Numbers of the form `MDCCLIX` should be recognized, but not `DMCXI` or `CXVIII`

Problem 2.5 (Quiz for the TAs)

25pt

Your last assignment this semester is to give your TAs a quiz. We hope you will enjoy this :)
You need to create a form in HTML that contains the following:

1. Include at least 5 multiple choice questions.
2. All following concepts: button, radio button, check box, drop down box, text input.
3. At least one image and one working link.
4. Tables, lists.
5. Make it look nice overall (styles, colors ...)

You can provide a fictive action attribute.

Hint: HTML is useful and easy to learn. Start by finding a nice tutorial online.