Programing Languages 1
Exam 2 (M12)

2015. spring

I accept the rules and regulations of the university and the class. At the beginning of the semester I was informed about the criteria to pass (provided in written form on the homepage of the class).
Without my signature this exam cannot be graded, and counted in to the final grade.

_____ _____

signature *name*

1. Write a C program that reads in 15 integer numbers from the keyboard to an array (2p). Print out that number which has the largest absolute value (2p). Write and use your own function to calculate the absolute value of an int number (2p). (The absolute value of a positive number is itself, while the absolute value of a negative number is -1 times the number)

   Example run:
   ```
   Give a number please... -2
   Give a number please... 5
   Give a number please... -7
   Give a number please... 3
            ...
   Give a number please... 4
   The number with the largest abs value: -7
   ```

2. Write a C program in which you read in numbers from the file `in.txt` (2p) (to test your program you have to create this file). Read the numbers while you do not reach the End Of File (2p). Print out the sum of the numbers to the screen (1p).

   Example run:
   (If the file in.txt contains:
   15
   12
   37
   29)
   Output: Sum: 93

3. Write a C program that reads in the radius of a circle and then it prints out the circumference *(2·r·π)* and the area *(r·r·π)* of it (2p). In your program you **must** implement and use the following function (4p):

   ```
   void calculate(float r, float *area, float *circum);
   ```

   Where `r` is the radius, and `area` and `circum` have the addresses of variables where we would like to have the area and the circumference of the circle. The function must not print out anything to the screen. You can use `3.14` as the value of *π*.

   Example run:
   ```
   r: 5.2
   area: 84.90
   circumference: 32.65
   ```

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4. Create a C program, in which you define a structure to hold information about a programming languages student (2p). A student has the following properties: first name (max 29 char), last name (max 29 char), test1 points, test2 points. In your program read in data for two students to two struct type variables (2p) and after this print out the data of that student that reached a higher sum of points (2p). Use the format shown below when you print back the data (name – sum_of_points). (1p)

Example run:

```
 Student1 first name: John
Student1 last name: Smith
Student1 test 1: 25
Student1 test 2: 20
Student2 first name: Robert
Student2 last name: Smith
Student2 test 1: 19
Student2 test 2: 27

Better result: Robert Smith - 46p
```

5. Write a C program in which you read in integer numbers from the keyboard until 0 (2p) and print out those numbers to a file (`out.txt`) (2p) that are bigger than 10 and less than 20 (2p).

Example run:

```
Give a number please... 20
Give a number please... 31
Give a number please... 10
Give a number please... 47
Give a number please... 36
Give a number please... 30
Give a number please... 40
Give a number please... 0

(Now in the file out.txt we have:
    31
    36
)
```