

Programing Languages 1

Exam 2 (sample)

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 can not 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 the largest negative number of the array (2p). Write and use your own function to decide whether a number is negative or not (2p).

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: -2

2. Write a C program in which you read in numbers from the file (in.txt) (2p). Read the numbers while you do not reach the End Of File (2p). Print out the biggest number read 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 length of the side of a cube and prints out the surface ($6 \cdot a \cdot a$) and the volume ($a \cdot a \cdot a$) of it (2p). In your program you **must** implement and use the following function (4p):

```
void calculate(float a, float *surface, float *volume);
```

Where a is the radius, and surface and volume have the addresses of variables where we would like to have the surface and the volume of the cube. The function must not print out anything to the screen.

Example run:

a: 5.2
surface: 162.24
volume: 140.60

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4. Create a C program, in which you define a structure to hold information about a car (2p).

A car has the following properties: brand (max 29 char), type (max 29 char), year. In your program read data for two cars to two struct type variables (2p) and after this print out the data of that car that is older (2p).

Use the format below when you print back the data (brand type – age). (1p)

The age of a car is (2014 – its year value). If the two car has the same year field print out the first.

Example run:

Car1 brand: Opel

Car1 type: Astra

Car1 year: 1995

Car2 brand: Toyota

Car2 type: Corolla

Car2 year: 1994

Older car: Toyota Corolla - 20

5. Write a C program in which you read in integer numbers from the keyboard until 0 (2p) and print out the even numbers read to a file (out.txt) (3p). When you run your program again, do not erase the contents of the out.txt file, just add the new numbers to the end of it. (1p)

Example run:

Give a number please... 20

Give a number please... 31

Give a number please... 40

Give a number please... 0

(Now in the file out.txt we have:

```
20
40      )
```

Run again:

Give a number please... 12

Give a number please... 31

Give a number please... 10

Give a number please... 0

(Now in the file out.txt we have:

```
20
40
12
10      )
```

