2020 年度　工学システム学類
プログラミング序論 B　【レポート課題１】　※演習の課題は別にあります。

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以下の設問 1)から 3)に回答せよ。解答スペースは自由に変更して構わない。

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1) メモリ空間は、「プログラム領域」、「静的変数領域」、「ヒープ領域」、「スタック領域」の４種類の領域に分類される。各々、どのような変数が格納されるのか答えよ。

2) 静的変数領域に書き込まれる変数は、参照可能範囲（スコープ）によって 3 種類に分類される。それらの名称を答えよ。

3) 2)で答えた３つの静的変数の宣言の仕方を示し、局所変数との違いを述べよ。

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1) The memory space is consisted of four different regions such as "program area", "static variable area", "heap area" and "stack area". Answer what kind of information or variables are stored in each of them.
2) Variables stored in the "static variable area" are classified into three types according to the referenceable area (scope). Answer the names of them.
3) Show how the three static variables answered in 2) are declared and describe how they differ from local variables.

(The responses are on the next page.)

1) Static variable area stores variables that are statically allocated outside any functions, such as global variables or static variables.
   Heap area is dynamically allocatable memory. It can be called using malloc or realloc.
   Stack area is used for variables that are temporarily used inside of functions.
2) Global variables, static variables in a file, static variables in a function.
3) A global variable is declared outside of the functions in any file. It is accessible everywhere in the whole program (using extern if the reference is from another file).
   A static function in a file is declared outside of a function, and not accessible to other files.
   A static variable inside a function is declared inside a function, and it's not accessible to any other functions even in the same file.

   A static variable preserves static memory allocations, so its value won't get "erased" with each call of the function, unlike local variables which gets rewritten over at each call.