COMP 2011 Quiz 1 - Spring 2018 - HKUST

Date: Mar 6, 2018

Time Allowed: 30 minutes

Instructions:
1. This is a open book, open notes examination. No electronic devices are allowed.
2. There are **5** questions on **4** pages (including this cover page).
3. Write your answers in the space provided.
4. All programming codes in your answers must be written in the ANSI C++ version as taught in the class.
5. For programming questions, you are **NOT** allowed to define additional helper functions or structures, nor global variables unless otherwise stated. You also **cannot** use any library functions not mentioned in the questions.

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Student ID	
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Lecture & Lab Section	L1 (Version B)

	Problem	Score
	1	/ 20
	2	/ 20
For T.A.	3	/ 20
Use Only	4	/ 20
	5	/ 20
	Total	/ 100

Problem 1 [20 points]

What is a reference variable?

Answer: Reference variable has to be bound to another variable, and hence it is an alias of the variable.

Problem 2 [20 points]

Given the array:

```
const int SIZE = 5;
int a[SIZE] = {3, 6, 4, 2, 7};
```

Assume the `void swap(int &a, int &b)` function works as given in notes, what will the above array contains when the following code segment is executed?

```
for (int i = 0; i < SIZE-1; i++)
   if (a[i] < a[i+1])
      swap(a[i], a[i+1]);
```

Answer:

Array element	a[0]	a[1]	a[2]	a[3]	a[4]
Value	6	4	3	7	2

Problem 3 [20 points]

What does the following function do?

```c
int fun(int a[], int size) {
    int n = a[size-1], m = size-1;
    for (int i = size-1; i > 0; i--)
        if (a[i] < n) {
            m = i;
            n = a[i];
        }
    return m;
}
```

Answer: Return the index of the array element with the minimum value.
Or
Except the first element, return the index of the array element with the minimum value

Problem 4 [20 points]

Modify the function `swap()` in the notes to work with an integer array given in the 1st parameter so that it only swaps the values of the first and the last elements and the size of the array is given in the 2nd parameter. Fill in the formal parameter list and the function body.

Note: it should be able to handle 1-dimensional integer array of any size.

Answer:

```c
void swap(  int a[], int size ) {

    int temp = a[0];
    a[0] = a[size - 1];
    a[size - 1] = a[0];

}
```

Problem 5 [20 points]

Write a function `fun()` which takes an integer array and its size as the parameters. It replaces the ith element by the sum of the first i elements in the original array, i.e. For example, the array `[1, 2, 3, 4, 5]` becomes `[1, 3, 6, 10, 15]`.

Write both the function header and the function body.

Answer:

```
void fun(int a[], int size)
{
   for (int i=1; i<size; i++)
      a[i] = a[i-1] + a[i];
}
```

-------------------- END OF PAPER --------------------