



Seat
Number

King Mongkut's University of Technology Thonburi
Final Examination
Semester 1 – Academic Year 2011

Subject: EIE 105 Computer Programming for Electrical Communication and Electronic Engineering
For: Electrical Communication and Electronic Engineering, Freshman (Inter. Program)
Exam Date: Friday September 30, 2011 **Time:** 13.00-16.00

Instructions:-

1. This exam consists of 4 problems with a total of 9 pages, including the cover.
2. This exam is opened-book.
3. You are allowed to use a written A4 note for this exam.
4. Answer each problem on the exam itself.
5. A calculator compiling with the university rule is allowed.
6. A dictionary is allowed.
7. **Do not** bring any exam papers and answer sheets outside the exam room.
8. Open Minds ... No Cheating! GOOD LUCK!!!

Remarks:-

- Raise your hand when you finish the exam to ask for a permission to leave the exam room.
- Students who fail to follow the exam instruction might eventually result in a failure of the class or may receive the highest punishment with university rules.
- Carefully read the entire exam before you start to solve problems. Before jumping into the mathematics, think about what the question is asking. Investing a few minutes of thought may allow you to avoid twenty minutes of needless calculation!

Exam No.	1	2	3	4	TOTAL
Full Score	20	20	30	30	100
Graded Score					

Name _____ Student ID _____

This examination is designed by
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This examination has been approved by the committees of the ENE department.

(Assoc. Prof. Wudhichai Assawinchaichote, Ph.D.)
Head of Electronic and Telecommunication Engineering Department

1. (20 points) Consider a following program

```

1. #include <iostream>
2.
3. using namespace std;
4.
5. char *UChars(char *s)
6. {
7.     int arr[256]={0};
8.
9.     while(*s) {
10.         arr[*s]++;
11.         if(arr[*s] > 1) return "not unique";
12.         s++;
13.     }
14.     return "unique";
15. }
16.
17. int main()
18. {
19.     cout << UChars("abcdefghijk1") << endl;
20.     cout << UChars("abcdefghiiii") << endl;
21.     return 0;
22. }

```

Explain what is the program trying to do? What are the outputs of the program?

2. (20 points) Consider the following code

```
1. int x=0;
2.
3. switch(x)
4. {
5. {
6.
7.     case 1: cout<<"One";
8.
9.     case 0: cout<<"Zero";
10.
11.    case 2: cout<<"Hello World";
12.
13. }
```

What is the output of the code? If you are asked to modify the code such that the output of x is printed on the window console with a new line cursor, what does the new code look like? (You are required to write a new complete code)

3. (30 points) Consider the following program

```
1.  #include <iostream>
2.  #include <string>
3.
4.  using namespace std;
5.
6.  void rmChars(string inStr, string rmvStr)
7.  {
8.      int i = 0, j = 0;
9.      char flag[256] = {0};
10.     while(i < rmvStr.size()){
11.         flag[rmvStr.at(i++)]++;
12.     }
13.
14.     for(i = 0; i < inStr.size(); i++) {
15.         if(flag[inStr[i]] == 0) {
16.             inStr[j++] = inStr[i];
17.         }
18.     }
19.     inStr[j] = '\0';
20.     inStr.resize(j);
21. }
22.
23. int main()
24. {
25.     string input = "Ludwig Van Beethoven";
26.     string rm = "aeiouAEIOU";
27.     cout << "In: " << input << endl;
28.     cout << "removing " << rm << "..." << endl;
29.     rmChars(input, rm);
30.     cout << "Out: " << input << endl;
31.
32.     return 0;
33. }
```

Unfortunately, the program still has one error to be fixed in order to achieve the task.

3.1)(15 points) Please fix and write down a complete new code.

3.2)(5 points) After the code is fixed, explain what does the program do?

3.3)(10 points) What is the expected output of the fixed program?

4. (30 points) Please complete the following program (by filling in lines 2, 3, 7, 18, 25, 28) so that it will read data from the file `test.txt` and print out the data.

```
1. #include<iostream>
2.
3.
4.
5. #define MAX 10
6.
7.
8. public:
9.     char name[25];
10.    int Ex1, Ex2;
11. };
12.
13. int main()
14. {
15.     Student st[MAX];
16.     int count = 0;
17.
18.
19.     if( in.fail() ){
20.         cerr << "Cannot open test.txt" << endl;
21.         exit(1);
22.     }
23.
24.     while(!in.eof()){
25.
26.         cout << st[count].name << " " << st[count].Ex1 <<
27.             " " << st[count].Ex2 << endl;
28.
29.         if(count >= 10){
30.             cout << "Exceed MAX read: " << MAX << endl;
31.             in.close();
32.             exit(-1);
33.         }
34.     }
35.
36.     in.close();
37.     return 0;
38. }
```

The input file `test.txt` contains the following data:

Eric	77	87
Scott	90	94
Mary	100	100