Introduction to Computing
CS 151
Department of Physics and Computer Science
Medgar Evers College
Exam 2

Direction: Submit your typed work(s) as an upload(s) to the Exams directory of your GitHub repository or Dropbox, or in your Exam02 google classroom assignment.

Section	Maximum Points	Points Earned
Fundamentals	5	
Problem Solving	5	
Tracing	5	
Debugging	5	
Total	20	

Fundamentals

1. **For each of the following questions, write ONLY what is requested.**

   a. Given the double variables x and y that have been initialized, write a statement(s) that displays `"Same"` if x is equal to y; otherwise, it displays `"Different"`.

   b. Write an int function prototype named `Value()` that takes an int array parameter, an int parameter, and two char reference parameters respectively.

   c. Write a void function named `SwapIfGreater()` that takes two double reference parameters. It swaps the values of the parameters only if the first parameter is greater than the second parameter.

   d. Write a statement that initializes a string array of size 5 named *roman* with the first five roman numericals.

   e. Given that the int variable n has been initialized, write a statement(s) that assigns the cube of the sum of n and its next consecutive value to a variable.

Problem Solving

2. **Write a string function named `MonthName()` that takes an int parameter. It returns a string of the name of the month in the position represented by the parameter if the parameter is between 1 and 12 inclusively; otherwise, it returns an empty string. For instance, the function calls `MonthName(4)` and `MonthName(34)` will evaluate to `"April"` and `""` respectively.**

Tracing

3. **Generate the trace table or trace table list of the function call `S(w,x,y,z)` where `w,x,y` and `z` equal 2, 21, 9 and 17 respectively with the definition below**

```
void S(int& a,int& b,int& c,int& d)
{
 if(a < b)
 {
  a = a + b;
  b = a - b;
  a = a - b;
 }

 if(b < c)
 {
  b = b + c;
  c = b - c;
  b = b - c;
 }

 if(c < d)
 {
  c = c + d;
  d = c - d;
  c = c - d;
 }

 if(a < b)
 {
  a = a + b;
  b = a - b;
  a = a - b;
 }

 if(b < c)
 {
  b = b + c;
  c = b - c;
  b = b - c;
 }

 if(a < b)
 {
  a = a + b;
  b = a - b;
  a = a - b;
 }
}
```

Debugging

4. **Write ONLY the line number and the entire line correction for each line that has an error in the code below.**

```
01  #include <iostream>
02  #include <cstdlib>
03  #include <ctime>
04  using namespace std;
05
06  int set(int a[],int i,int v)
07  {
08   if(v % 2 == 0)
09   {
10    a[i] = v;
11   }
12   else
13   {
14    a = v + 1;
15   }
16  }
17
18  int swapMid(int a[],int i,int j)
19  {
20   int t = a[i];
21   a[i] = a(j);
22   a[j] = t;
23   return (a[i] + a[j]) / 2;
24  }
25
26  void set(int a[],int p)
27  {
28   a[p+1] = rand() % 10 + 1;
29  }
30
31  int mismatches(int x[],int y[],int i)
32  {
33   bool v[3] = {x[i] == y[i],x[i+1] == y[i+1],x[i+2] == y[i+2]};
34   int c = "0";
35
36   if(!v[0])
37   {
38    c += 1;
39   }
40   else if(!v[1])
41   {
42    c += 1;
43   }
44   elif(!v[2])
45   {
46    c += 1;
47   }
48   return c;
49  }
50
51  int main()
52  {
53   srand(time(NULL));
54   const int nms[10], t;
55   int vls[] = {6,4,8,3,2};
56
57   set(nms,1);
58   t = swapmid(vls,0,2);
59   set(nms,1,t);
60   set(vls,4);
61   nms[3] = vls[2];
62   set(nms,2,nms[3]);
63   set(vls,4,mismatches(nms,vls,0));
64   nms[9] = mismatches(vls,nms,1);
65   nms[8] = swapmid(vls,2,4);
66
67   cout << "Enter ";
68   cout << ((nms[8] > nms[9])?("odds"):("evens")) << "\n";
69   cin << nms[7];
70   cout << "value test:  " << t << '\n';
71   cout << ((t % nms[8] % 2 == 0)?("valid"):("invalid")) << '\n';
72   return 0;
73
```