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 -1 if x is less than y, 1 if x is greater than y, or 0 if x and y are equal.

   b. Given the int function named `T()` that takes an int parameter and returns the sum of the factors of the absolute value of its parameter has been defined, write a statement(s) that assigns the square of 6 more than 3 times the sum of the factors of 2100 to a variable.

   c. Write a statement that initializes a constant int array of size 6 named *odd3s* with the first six positive odd consecutive multiples of 3.

   d. Write a string function named `PasFail()` that takes a double parameter. It returns `"Pass"` if the parameter is greater than or equal to 65; otherwise, it returns `"Fail"`.

   e. Write a bool function prototype named `Valid()` that takes two char array parameters, an int reference parameter, two string parameters and a string reference parameter respectively.

Problem Solving

2. **Write a string function named `WeekDayName()` that takes an int parameter. It returns a string of the name of the week day in the position represented by the parameter if the parameter is between 1 and 7 inclusively with 1 corresponding to `"Sunday"`; otherwise, it returns an empty string. For instance, the function calls `WeekDayName(4)` and `WeekDayName(34)` will evaluate to `"Wednesday"` 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 37, 26, 45 and 19 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  void set(int a[],int i,int v)
07  {
08   if(v % 2 == 0)
09   {
10    a[i] = v;
11   }
12   else (v % 2 == 1)
13   {
14    a[i] = v + 1;
15   }
16  }
17
18  int swapmid(int a[],int i,int j)
19  {
20   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  void mismatches(int x[],int y[],int i)
32  {
33   bool v[3] = {x[i-1] == y[i-1],x[i] == y[i],x[i+1] == y[i+1]};
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   else if(!v[2])
45
46    c += 1;
47   }
48   return c;
49  }
50
51  int main()
52  {
53   srand(time(NULL));
54   int nms[10], t;
55   const int vls[] = {6,4,8,27,12};
56
57   set(nms,1);
58   t = swapmid(vls,0,2);
59   set(nms,1,t);
60   set(mns,3);
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,3);
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  }
```