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. Write a statement that initializes an int array of size 6 named *primes* with the first six prime numbers.

   b. Write a void function prototype named `Print()` that takes a char reference parameter, two int parameters and a string array parameter respectively.

   c. Given the char variable *a* that has been initialized, write a statement(s) that displays the message `"Yes"` if *a* is equal to `'y'` in any case, or it displays `"No"` if *a* is equal to `'n'` in any case.

   d. Write an int function named `Read()` that takes no parameters. It should read a value from the user; and then, return six times the input of the user.

   e. Write a statement that assigns a variable a 4×4 square border of asterisks.

Problem Solving

2. **Write a string function named `DigitName()` that takes an int parameter. It returns a string of the name of the parameter if the parameter is a digit; otherwise, it returns an empty string. For instance, the function calls `DigitName(4)` and `DigitName(34)` will evaluate to `"four"` 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 10, 8, 12 and 5 respectively with the definition below**

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

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

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

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

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

 if(b < a)
 {
  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
13   {
14    a[i] = v + 1;
15   }
16  }
17
18  void swapmid(int a[],int i,int j)
19  {
20   int t = a[i];
21   a[i] = a[j];
22   a[t] = 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[2] = {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(!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   int vls[] = {6,4,8,9,13};
56
57   set(nms,0);
58   t = swapmid(vls,0,2);
59   set(nms,1,t);
60   set(nms,10);
61   nms[3] = vls[2];
62   set(nms[0],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  }
```