CSE 100: Principles of Programming with C++
Department of Computer Science
Arizona State University, Fall B 2013
Midterm II, ~~100~~ 80 Points

Your Name: Solutions

Directions: To

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Page 1

_F_ a) In C++, case is a reserved word, but break is not a reserved word.

_F_ b) In a switch statement, every case must have a break.

_T_ c) [3 points] Assume all variables are properly declared. The output of the following C++ code is 0 1 2 3 4.

```
n = 0;
while (n < 5)
{
  cout << n << " ";
  n++;
}
```

_F_ d) Assume all variables are properly declared. The output of the following C++ code is 1 2 3 4 5 6 7 8 9 10.

```
for (i = 1; i <= 10; i++);
  cout << i << " " ;
```

_F_ e) Consider the following for loop.

```
int i;

for (i = 1; i < 20; i++){
    cout << "Hello World";
}
cout << endl;
```

in this for loop, the world "Hello World" will be printed 20 times.

_T_ f) If a **continue** statement is placed in a while structure, the loop-continue test is evaluated immediately after the continue statement.

_F_ g) global variables can be accessed by the main method only.

_T_ h) do-while loop is guaranteed to be execute at least once.

Page 2

___ a) What does <= mean?

a. less than
b. greater than
c. **less than or equal to**
d. greater than or equal to

___ b) A loop that continues to execute endlessly is called a(n) ___ loop.

a. end
b. unlimited
c. **infinite**
d. definite

___ c) Suppose x is 7 and y is 7. Choose the value of the following expression:
(x == 7) && !(x <= y)

a. **false**
b. true
c. 1
d. null

___ d) What is the output of the following code?

```
char lastInitial = 'A';
switch (lastInitial)
{
case 'A':
   cout << "section 1";
case 'B':
   cout << "section 2" <<endl;
   break;
case 'C':
   cout << "section 3" <<endl;
   break;
case 'D':
   cout << "section 4" <<endl;
   break;
default:
   cout << "section 5" <<endl;
}
```

a. section 1 section 2
b. section 5
c. section 2
d. None of the above

e) What will be printed after the following code is executed?

```
for (int number = 5; number <= 15; number +=3)
  System.out.print(number + ", ");
```

A) 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
B) 5, 8, 11, 14
C) 5, 8, 11, 14, 17
D) This is an invalid for statement

f) In the following code, what values could be read into number to terminate the while loop?

```
cout<<"Enter a number:  ";
int number;
cin>>number;

while (number < 100 || number > 500)
{
  cout>>"Enter another number:  ";
  cin>>number;
}
```

A) Numbers in the range 99 through 501
B) Numbers less than 100
C) Numbers greater than 500
D) Numbers in the range 100 through 500

g) How many times will the following do-while loop be executed?

```
int x = 11;
do
{
  x += 20;
} while (x > 100);
```

A) 5 **B) 1** C) 0 D) 4

h) What will be the value of x after the following code is executed?

```
int x = 10;
for (int y = 5; y < 20; y +=5)
  x += y;
```

A) 25 **B) 40** C) 30 D) Invalid for statement

3. [

(a) **[5 points]** What is the output of the C++ code (Assume all variables are properly declared.)

```
num = 100;
while (num <= 148)
    num = num + 5;
cout << num << endl;
```

when num = 145 while condition is true. so it executes one more time.
num will be 150

150

(b) **[5 points]** Assume all variables are properly declared and the input is 12 6 5 –1 8. What is the output of the following code?

```
sum = 0;
cin >> num;
while (num != -1)
{
   cin >> num;
   sum = sum + num;
}
```

num 12 6 5 -1 exit

sum 0 6 11 10

Sum = 10

(c) **[5 Points]** Suppose x and y are int variables. Consider the following statements.

```
if (x > 5)
   y = 1;
else if (x < 5)
{
   if (x < 3)
      y = 2;
   else
      y = 3;
}
else
   y = 4;
```

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y = 3

What is the value of y if x = 4?

(d) **[5 points]** What is the output of the following program segment?

```
int y = 22;

while ((y % 3) != 0)
{
  cout << y << " ";
  y = y - 2;
}
```

22 % 3 = 1

y = 20 ; 20 % 3 = 2

y = 18 18 % 3 = 0

22 20

will not be read as j = 5

e) [5 Points] Suppose that the input is 100 20 -8 50 20. What is the output of the following C++ code?

```
int sum = 0;
int num;
int j;

for (j = 1; j <= 4; j++)
{
    cin >> num;
    if (num < 0)
        continue;

    sum = sum + num;
}

cout << sum << endl;
```

loop executes four times →

— skips rest of the loop

Answer:

sum	0	100	120	170
num	100	20	-8	50
j =	1	2	3	4

170

20

4. [~~15~~ Points] The following code segment reads a string (consists of letters and digits) from the keyboard and count how many '0' s in the string

```
string str;
int zeroCount=0;
getline(cin,str);

  for(int i = 0 ; i <= str.length() - 1 ; i++)
   {
          if(str[i]== '0')
          zeroCount++;
    }
```

i.) [5 Points] Rewrite the above code using a while loop

```
i=0;
while( i < str.length() )
{
        if (str[i] == '0' )
          zeroCount++
        i++;
}
```

ii) [5 Points] Modify the above code (code given or your answer to part i above) so that it count total number of digits in the string str. ASCII values for digits are values are between 48-57.

```
int digitcount =0;
int i=0;
   while (i< str.length() )
   {
        if ( str[i] >= '0' && str[i] <= '9')
          digitCount++;

}
```

checks if char is between '0' and '9'

a) [10 Points] Write a C++ code segment that reads integers from the keyboard until user enter 0 and determine the largest integer entered.

```
int data;
int largest;

cin>> data;          //—Reads the first number
largest = data;      // – assume that the first number is the largest

while ( data != 0 )
{
    if( largest < data )
        largest = data;

    cin >>data;

}

}
```