**CS 120: Computer Science I**

University of Idaho

Fall 2016

**Exam #1 (Alternate)**

Answer all Questions

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student ID:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question #1**: Analyze the C++ code below and write EXACTLY what the program will output. Note that the ASCII value of character ***a*** is 97 and for ***A*** is 65 in decimal. [**5 points**]

#include <iostream>

using namespace std;

int main()

{

int i=0;

char message[] = {'H', 'e', 'l', 'l', 'o', ',', ' ', 'W', 'o', 'r', 'l', 'd', '!', '\0'};

while (message[i] != '\0')

{

if ((message[i] >= 'a' && message[i] <= 'z') || (message[i] >= 'A' && message[i] <= 'Z'))

if (message[i] >= 'a' && message[i] <= 'z')

cout << (char) (message[i] - ('a'-'A'));

else

cout << message[i];

else

cout << message[i];

i++;

}

cout << endl;

return 0;

}

**Question #2**: Analyze the C++ program below and show what this program will output when you enter 30 as the value for ***w***. [**5 points**]

#include <iostream>

using namespace std;

int main()

{

int i, j=7, b, w;

double s;

int m[7] = {24, 402, 89, 212, 67, 350};

cout << "Enter the value of w: ";

cin >> w;

cout << endl;

b=m[0];

for (i=1; i<j; i++)

if (m[i] > b)

b=m[i];

s = b/w;

for(i=0; i<j; i++)

{

cout << i << " ";

for(b=1; b<=m[i]/s; b++)

cout << "\*";

cout << endl;

}

return 0;

}

**Question #3**: A character string or array is called a palindrome if it reads the same if you read it forward or backward. For example, the strings ***anutforajaroftuna*** (reads “A nut for a jar of tuna”) and ***asantaatnasa*** (reads “A santa at nasa”) are both palindromes. Write a C++ program which will write “The supplied string S is a palindrome” when you assign either of these two strings to a character array ***S*** of size ***n*** = the length of the string S or the size of the array S, and writes “It is not a palindrome”, otherwise. [**5 points**] [*You will get* ***extra 3 points*** *if your program can read any string (especially other than these two) instead (of being assigned to S) from the console using “****cin****” statement and declare identically if it is a palindrome or not*.]