Final -Rules · Closed Book · closed Notes · 1 hr 50 min

. Picture 1D

### Final (100 points)

### CS 161: Introduction to Computer Science 1

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- 1. (25 points) Write <u>one</u> or two lines of <u>code</u> to answer each of the following questions. Do <u>not</u> write complete programs —
- a) Define an array that is large enough to hold your first name and another to hold your last name

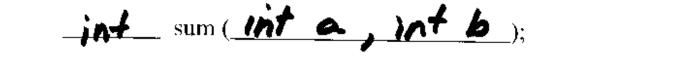
char first [6]; char last [25]; b) Now, read in just your first name into this array; show the input operation:

c) What if your last name was Van Norman what would the input operation look like:

d) Now, write the code to show how you can get rid of <u>all characters</u> from the input buffer, until a carriage return is encountered:

## 2. (25 points) Short Answer questions on Functions

a) Write a function prototype that takes in 2 integer arguments (by value) and returns an integer:



b) Now change the function prototype so that the function can use the first argument to supply the calling routine with the answer (instead of "returning" an integer):

c) Why is it better to use call by reference than it is to use call by value?

d) Write a function prototype that takes in a float as an argument (by reference) and returns a single character

cher calculate ( float );

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e) When working with an array of characters, how do you know when you have reached the end of the character array?

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4) (25 points) Arrays of characters



a) How can you decide if a word, stored in an array of character is capitalized (Is the first character upper case?)?

Find out if the word is capitalized:

if  $(\text{word} [\phi]) = A' \{\{\{\{\{\}\}\}\}\}\}$  word  $\{\{\{\}\}\}\}$  b) For this same array, how can you compare this array to see if it is the phrase "hello there" if  $(\{\{\}\}\})$  word  $\{\{\}\}\}$ 

if ( Stremp (word, "hello thme") == \$\phi\$ //match

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array of characters.

C) How could you count the number of times the complete word "hi" can be found in an

# CS161 Final Exam Introduction to Computer Science 1

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- 1. Algorithms, Style, Ethics
- a. Briefly explain why it is important to write an algorithm before you create your program

b. Give an example of a situation that would benefit from an algorithm

 Show an example of some C++ code that exhibits good style –

Put your code here: Taim to the oreas of

gara nyi

```
#include <iostream>
using namespace std;
```

```
int main()
{
```

d	. I sent an email the other day to a Professor.
	thought it was confidential. They forwarded it
	on to the entire faculty. "They e-mailed me a
	copy, so I can post it." Is this ethical? Briefly
	discuss.

## 2. C++ Programming – Fundamentals

a. Show two VALID variable names

## b. Show two INVALID variable names

c. Create a variable to hold a user's response of Y or N

d. Prompt the user to enter in a response of Y or N:

f	Check to see if the response is either a Y or an
1,	— Circux to see if the response is entire a 1 of all
g.	Check to see if the response is either a Y or an lower case y or n
h.	What kind of variable would we need if the use was allowed to enter YES or NO:
•	Show how to read the response of YES or NO in from the user:
-	Show how to find out if the user enter in YES

- 3. C++ Programming Comprehensive
- a. What type of loop would you use if you wanted to capitalize every character in an array. Explain why you selected this loop

b. What type of loop would you use to play a game until the user cither wins or wants to be done. Explain why you selected this loop.

c. What type of loop would you use to play a game until the user either wins or wants to be done. Explain why you selected this loop.

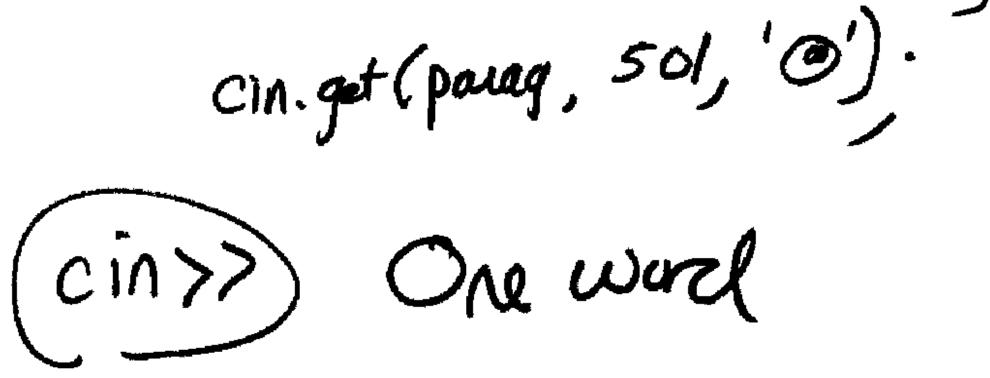
d. Write prototype statements a function that returns nothing and takes a single character (by value) and a floating point value (by reference) as arguments:

void some\_function (chara, float & b)-

e. Assume you have an array of characters and assume that it has some valid information in it (maybe a sentence) followed by a '\0'. Your job is to count the number of lower case 'a' characters in the array:

f. What If I wanted to copy the word "holiday" into an array of characters, how large should I make the array?

g. Why would I want to use the 3 argument version of cin.get?



tolower cetype o toupper estring o stremp strepy stren iostreem o cin.get (3 augument)
o cin.ignore (2 augument)

toupper à to lover 1) Pass by Value functions char toupper (char); extractive aginal anginal chan ch='a')
ch = toupper (ch) (2) "clear" an array char word [11];
word [9]=19;

```
int stren (chan []);
                  than word[11];
                  cin'>> word)
                  un = strun (word);
                Stropy ( arrows of dr, array of when)
                          destration
                  cher copy [11];
Strepy (copy, word);
hello/0
 hellov
```

#### 3. (25 Points) Write C++ Code

Assume you have an array of characters and assume that it has some valid information in it (maybe a sentence) followed by a ''0'. Your job is to count the number of uppercase alphabetic characters in the array.

- Use FOR LOPP

a) If this was written as a function...what do you think the function prototype would look like? int count-upper (char array [3),

b) Ok...now write the code (no. it doesn't need to be in a function!)

int count upper (chor array [])

int count = Strun(array);

int len = Strun(array);

for (inti=  $\phi$ ; i < (en; ++i) if (array [#] == toupper (array[#] ++ count;