Exam II

Due Nov 25 at 11:59pm	Points 60	Questions 33
Available after Nov 21 at 9a	m Time L	imit 50 Minutes

Instructions

This exam is open notes, open calculator, open compiler, and open internet. The exam is due by Sunday, November 25th, at 11:59pm. If you have not finished taking the exam by that time Canvas may not let you submit the test. Please plan your schedule accordingly.

The exam time limit is 50 minutes. You should set aside sufficient time to focus on the work and avoid distractions.

Human collaboration is strictly prohibited. You may not ask friends for help, copy code from others, or have any human assistance during the exam. If the instructor finds evidence that you cheated, you will receive a 0 grade on this exam.

You should expect that your code will reviewed and inspected for signs of plagiarism.

Attempt History

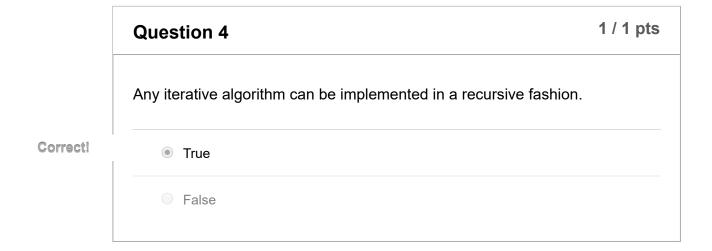
	Attempt	Time	Score
LATEST	Attempt 1	50 minutes	49 out of 60

Score for this quiz: **49** out of 60 Submitted Nov 24 at 3:02pm This attempt took 50 minutes.

	Question 1	1 / 1 pts	
Correct!	"cout" is able to display both C++ string objects as well as C-style strings.		
	True		
	False		

	Question 2	1 / 1 pts
	Array indices in C++ always start from 0.	
Correct!	True	
	False	

Question 3 C++ references can only be passed into a function and cannot be used as a return type. True False



Question 5 1 / 1 pts

In C++ the name of a 1-dimensional array can be used within the source code as a pointer to the first element within the array.

Correct!

True

False

Question 6

1 / 1 pts

Accessing an out-of-range array index in C++ will be detected at compile time and your program will not compile.

True

Correct!

False

Question 7

1 / 1 pts

If you have the following line of code:

you can use **my_string[0]** to access the first character contained in the my_string array.

Correct!

True

False

Question 8

0 / 1 pts

A C++ string object needs to have a NULL character to properly terminate the string.

12/2/2018	Exam II: INTRO TO COMPUTER SCIENCE I (CS_161_C001_F2018)
'ou Answered	True
orrect Answer	O False
	Question 9 1 / 1 pts
	C++ pointers can only be passed into a function and cannot be used as a return type.
	O True
Correct!	False
	Question 10 1 / 1 pts
	Variables allocated on the stack are said to be dynamically allocated.
	O True
Correct!	False
	Question 11 1 / 1 pts
	In C++ it's considered good practice to set all unused pointers to a value of 1.
	O True
Correct!	False

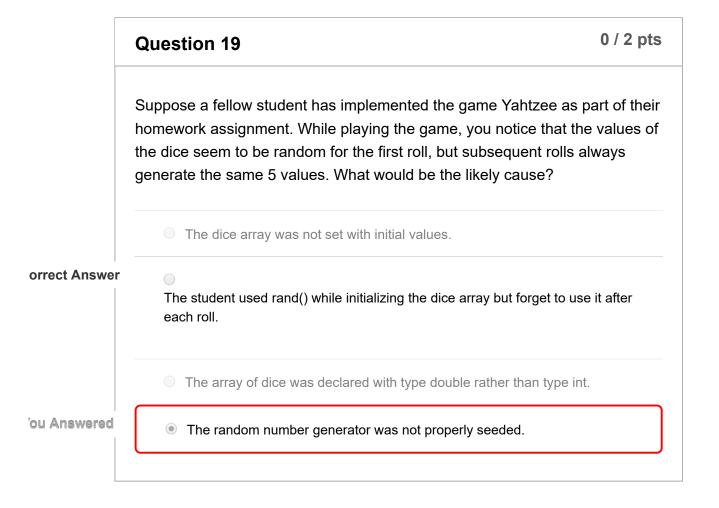
	Question 12	1 / 1 pts
	When a function calls itself, this behavior is known as recursion.	
Correct!	True	
	○ False	
	Question 13	1 / 1 pts
	A void pointer is any pointer that has a NULL value.	
	O True	
Correct!	False	
	Question 14	1 / 1 pts
	In C++ the * operator is used strictly for integer and floating point multiplication.	
	O True	
Correct!	False	
		1 / 1 pts
	Question 15	17 1 pts
	A pointer to a pointer cannot exist in C++.	

		(= = = ,
	True	
Correct!	False	

Question 16 Dynamic memory allocation occurs when memory is allocated at compile-time. True False

Consider the following code snippet: int my_array[12]; my_array[0] = 14; int* var = &my_array[0]; After execution, var contains: The value 12 The value 14 The memory address of the last element contained in my_array. The memory address of the first element contained in my_array.

Question 18 Write a declaration for a pointer named p1 that is capable of pointing to a double. Correct! double * p1; double * p1; double * p1; double * p1;



Question 20 2 / 2 pts

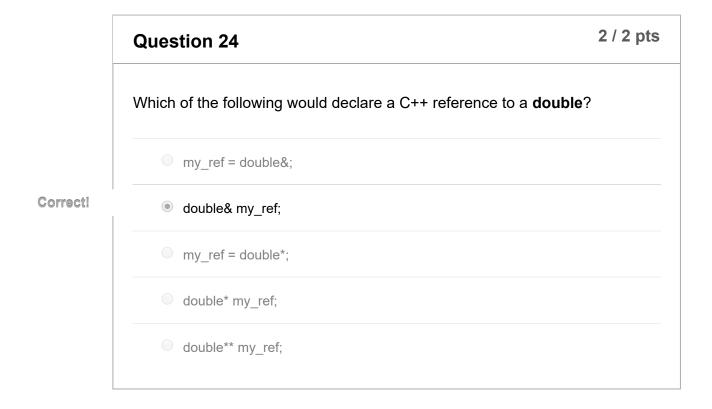
A variable that holds the address of another variable is said to be a:

	reference
	redirector
	alias
Correct!	pointer

Question 21 If you want to create a C-style string, how many characters must you reserve for the NULL terminator? 1 2 3 4

2 / 2 pts
ou determine the

	Question 23	0 / 2 pts
	Which of the following declarations is invalid?	
	float* fptr = NULL;	
	char* chptr = NULL;	
	char** ptr = NULL;	
'ou Answered	string* strptr = NULL;	
orrect Answer	Each of the declarations above are valid.	



Question 25 2 / 2 pts

Consider the following code snippet:

```
int my_array[12];
my_array[1] = 14;
int* var = &my_array[0];
int* addr = var;
```

Which of the following statements is true?

- addr is a pointer to the memory address of the variable var.
- var contains the value of the first element within my_array.

Correct!

- addr points to the first element within my_array.
- The first element of my_array contains the value 14.

Question 26 2 / 2 pts

Suppose you declare the following:

```
double inside = 2.6;
double* ptr = &inside;
```

Which of the following statements is not allowed?

- (*ptr) = 13.5;
- ptr = NULL;
- inside += 13.4;

- *ptr = &inside;
- cout << ptr << " " << *ptr;</pre>

Question 27

2 / 2 pts

A poorly written C++ program may dynamically allocate memory on the heap without remembering to deallocate it. In CS161 what is the term that we use to describe this problem? (two words)

Correct!

memory leak

orrect Answers

memory leak

Question 28 3 / 3 pts

Assuming an otherwise functional program, what is the output of this code after execution?

```
void fun(int &x, int y, int *z) {
    x++;
    y++;
    (*z)++;
}

int main() {
    int i = 3, j = 2, k = 1;
    fun(i, j, &k);
    cout << "i is " << i;
    cout << "j is " << j;
    cout << " k is " << k << endl;
    return 0;
}</pre>
```

- i is 4 j is 3 k is 2
- i is 3 j is 2 k is 1
- i is 4 j is 2 k is 1

- i is 4 j is 2 k is 2
- i is 3 j is 3 k is 2

Question 29 0 / 3 pts

In an otherwise functional program, explain why the following snippet of text is not valid C++ code. Assume that all other areas of the program are written correctly.

```
char my_char;
float f = 17.8;
float& my_ref;
my_ref = f;
```

Your Answer:

Trying to allocate a variable type of float to a char reference.

Question 30 2 / 2 pts

Consider the following code snippet:

```
int matrix[3][4];
int k = 0;
for(int i =0; i <= 2; i++)
  for (int j=0; j <= 3; j++)
    matrix[i][j] = j;</pre>
```

After execution, the value of matrix[2][3] is:

- 0 1
- 2

- 3
- 4
- Undefined

A recursive function that continually calls itself without a base case will cause what behavior? Generate an error at compile time. Operate correctly but will require nearly twice the execution time.

Correct!

Continue to use stack memory until all available memory is exhausted.

Be unable to use any memory from the heap.

Question 32 2 / 2 pts

Consider the following code snippet:

```
int* ar;
int size = 5;
int k = 4;
ar = new int[size];
for (int i=0; i<size; i++) {
   ar[i] = i*k;
}</pre>
```

After execution, what is the value of ar[4]?

Correct!

16.0000

orrect Answers

16.0 (with margin: 0.0)

Question 33 7 / 10 pts

Write C++ code to declare and initialize a dynamically allocated 2-dimensional array of **unsigned integers**. All array elements must be located on the heap. The array should have 2 rows with 10 columns inside each row (i.e. the entire 2D array will contain 20 unsigned integers).

Using loops of your choice, write code that will insert 10 <u>even</u> unsigned integers (beginning with 30, all the way up to 48) into the first row of the array.

In the second row of the array, use a loop to insert 10 <u>odd</u> unsigned integers (beginning with 31, all the way up to 49).

After you code has fully executed, the array contents should mimic the following diagram:

```
30, 32, 34, 36, 38, 40, 42, 44, 46, 48
31, 33, 35, 37, 39, 41, 43, 45, 47, 49
```

Your code must also free (deallocate) the dynamic memory that you used.

Your code does not need to include headers, function definitions or anything besides the lines that are specifically necessary to fulfill the requirements given above. In other words, you can just write a code snippet with the relevant lines. You still need to use proper C++ syntax and formatting.

Your Answer:

```
#include <iostream>
#include <stdio.h>
#include <stdlib.h>
#include <string>
#include <climits>
#include <ctime>
#include <cmath>
#include <cstdlib>
#include <bits/stdc++.h>
using namespace std;
int main () {
int result = 2;
int ** scoresheet;
scoresheet = new int* [result];
for(int i=0; i<result; i++) {
scoresheet[i] = new int[10];
}
```

```
for (int col=0; col<10; ++col){
    scoresheet[0][col] = (col*2)+30;
}

for (int col=0; col<10; col++){
    scoresheet[1][col] = 30+(col*2+1)
}
```

Quiz Score: 49 out of 60