Who wants to be a C programmer

Preparation for midterm

Game 1

Question 1. 500 points

echo \$((2 + 3)) | wc -l

What is the output (on stdout) from this command?

Α	0		
В	5		

С	1
D	2

Question 1. 500 points

echo \$((2 + 3)) | wc -l

What is the output (on stdout) from this command?

A	0	
В	5	

С	1	
D	2	

The correct answer is C.

Question 2. 1,000 points

• Assume you have a terminal open, and the current working directory contains a compiled program called *blurb*.

What is a correct shell command which will get the names of all files in the current directory, redirect the results as input to blurb, and store the output of blurb in a file called output.txt?

Α	blurb < (ls) > output.txt
---	---------------------------

B blurb < ls > output.txt

C ls | blurb > output.txt

D blurb ls | output.txt

Question 2. 1,000 points

• Assume you have a terminal open, and the current working directory contains a compiled program called *blurb*.

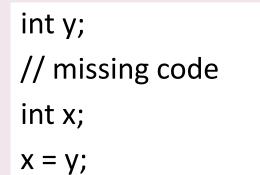
What is a correct shell command which will get the names of all files in the current directory, redirect the results as input to blurb, and store the output of blurb in a file called output.txt?

A	blurb < (ls) > output.txt
В	blurb < ls > output.txt
	The correct answer is C.

C ls | blurb > output.txt

D blurb ls | output.txt

Question 3. 2,000 points



Is there a problem with this code?

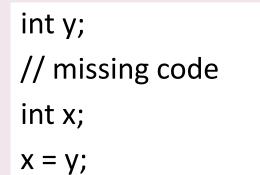
А	Compile error
	•

B No errors

С	Run-time error

D Possible run-time error

Question 3. 2,000 points



Is there a problem with this code?

Α	Compile error	С	Run-time error
В	No errors	D	Possible run-time error

The correct answer is **B**.

Question 4. 3,000 points

int z; int x; x = *z;

Is there a problem with this code?

B No errors

С	Run-time error

D Possible run-time error

Question 4. 3,000 points

int z; int x; x = *z;

Is there a problem with this code?

А	Compile error
В	No errors

С	Run-time error	
D	Possible run-time error	

The correct answer is A.

Question 5. 5,000 points

Here is one line of output from running *ls -1* on the current directory.

-rwxr-x--- 1 mgbarsky instrs 8377 Apr 11 10:53 my_prog

What the beginning of output would be if you were to run these two commands on current directory:

chmod 641 my_prog; ls -l my_prog

A -r-xrw-r--

B -rw-r---x

-rw--w-r--

D -r-xrw---x

Question 5. 5,000 points

Here is one line of output from running *ls -1* on the current directory.

-rwxr-x--- 1 mgbarsky instrs 8377 Apr 11 10:53 my_prog

What the beginning of output would be if you were to run these two commands on current directory:

chmod 641 my_prog; ls -l my_prog

A-r-xrw-r--CB-rw-r---xD

The correct answer is B.

-rw--w-r--

-r-xrw---x

Checkpoint 1 reached!

You have 5,000 points

void f (int arr[]) {

...

How does function *f* find the size of the array *arr*?

A Using *sizeof (arr)*

B Using arr.length

C The size of *arr* is unknown to *f*

D Using *sizeof* (*arr*)/*sizeof* (*int*)

void f (int arr[]) {

•••

How does function *f* find the size of the array *arr*?

A Using *sizeof (arr)*

B Using arr.length

C The size of *arr* is unknown to *f*

D Using *sizeof* (*arr*)/*sizeof* (*int*)

The correct answer is C.

Question 7. 10,000 points

#include <stdlib.h>

```
int func () {
    int a = 4;
    int *b = (int*) malloc (sizeof(int));
    *b = 5;
    int *c = (int*) malloc (sizeof(int));
    *c = a;
    int *d = c;
    b = c;
}
```

When *func* reaches *****, what are the values stored in variables a, *b, *c, and *d?

А	a:4	*b:5	*c:4	*d:4	
---	-----	------	------	------	--

В	a:4	*b:4	*c:4	*d:4
---	-----	------	------	------

С	a:5 *b:4 *c:4 *d:4
D	a:4 *b:5 *c:5 *d:5

Question 7. 10,000 points

#include <stdlib.h>

```
int func () {
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    *b = 5;
    int *c = (int*) malloc (sizeof(int));
    *c = a;
    int *d = c;
    b = c;
}
```

When *func* reaches **+**, what are the values stored in variables a, *b, *c, and *d?

A	a:4 *b:5 *c:4 *d:4	С	a:5 *b:4 *c:4 *d:4
В	a:4 *b:4 *c:4 *d:4	D	a:4 *b:5 *c:5 *d:5

The correct answer is B.

```
int func () {
    int a = 4;
    int *b = (int*) malloc (sizeof(int));
    *b = 5;
    int *c = (int*) malloc (sizeof(int));
    *c = a;
    int *d = c;
    b = c;
}
```

How many times would you need to call *free* to reclaim all dynamically allocated memory?

Α	1	time
---	---	------

B 2 times

С	3 times

D 0 times

```
int func () {
    int a = 4;
    int *b = (int*) malloc (sizeof(int));
    *b = 5;
    int *c = (int*) malloc (sizeof(int));
    *c = a;
    int *d = c;
    b = c;
}
```

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А	1 time	(
В	2 times	

С	3 times	
D	0 times	

The correct answer is B.

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int func () {
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    *b = 5;
    int *c = (int*) malloc (sizeof(int));
    *c = a;
    int *d = c;
    b = c;
}
```

Is there a memory that cannot be freed at this point?

А	no, we can free all
	allocated memory

B yes, memory allocated for b

С	yes, memory allocated
	for c

D both memory allocated for b and for c

```
int func () {
    int a = 4;
    int *b = (int*) malloc (sizeof(int));
    *b = 5;
    int *c = (int*) malloc (sizeof(int));
    *c = a;
    int *d = c;
    b = c;
}
```

Is there a memory that cannot be freed at this point?

A	no, we can free all allocated memory	(C yes, memory allocated for c
В	yes, memory allocated for b	[D both memory allocated for b and for c

The correct answer is **B**.

Question 10. 50,000 points

cd top mkdir top/dir ls -l top

Given the directory structure w5/top, your current directory is w5. *Which* chmod command you need to execute in order for you NOT to be able to do any of the commands above?

A chmod 100 top

B chmod 300 top

C chmod 500 top

D chmod 600 top

Question 10. 50,000 points

cd top mkdir top/dir ls -l top

Given the directory structure w5/top, your current directory is w5. *Which* chmod command you need to execute in order for you NOT to be able to do any of the commands above?

A chmod 100 top

B chmod 300 top

C chmod 500 top

D chmod 600 top

The correct answer is D.

Checkpoint 2 reached!

You have 50,000 points

Question 11. 75,000 points

}

```
#include <stdio.h>
```

```
int compute_sum (int numbers[]) {
```

```
int sum = 0;
```

```
for (int i = 0; i < sizeof (numbers); i++)</pre>
```

```
sum += numbers[i];
```

```
}
return sum;
```

{

}

```
int main () {
    int a[] = {1,1,1,1,1,1};
    int result = compute_sum (a);
    printf ("%d", result);
```

What is printed (32-bit system)?

A 0	C 4	1
B 6	D 1	L

Question 11. 75,000 points

}

```
#include <stdio.h>
```

```
int compute_sum (int numbers[]) {
```

```
int sum = 0;
```

```
for (int i = 0; i < sizeof (numbers); i++)</pre>
```

```
sum += numbers[i];
```

```
}
return sum;
```

{

}

```
int main () {
    int a[] = {1,1,1,1,1,1};
    int result = compute_sum (a);
    printf ("%d", result);
```

What is printed (32-bit system)?

A 0	С	4
B 6	D	1

The correct answer is C.

```
int *totals[3];
int x;
x = *totals[0];
```

Is there a problem with this code?

А	Compile error

B No errors

С	Run-time error

D Possible run-time error

```
int *totals[3];
int x;
x = *totals[0];
```

Is there a problem with this code?

А	Compile error

B No errors

C	Run-time error
D	Possible run-time error

The correct answer is **B**.

Question 13. 250,000 points

char *s = "hello"; char x; x = *(s+3);

Is there a problem with this code?

A Compile error

B No errors

С	Run-time error

D Possible run-time error

Question 13. 250,000 points

char *s = "hello"; char x; x = *(s+3);

Is there a problem with this code?

А	Compile error
В	No errors

C	Run-time error
D	Possible run-time error

The correct answer is **B**.

Question 14. 500,000 points

char *s = "hello"; *(s+4) = '\0';

Is there a problem with this code?

Α	Compile error
---	---------------

B No errors

С	Run-time error

D Possible run-time error

Question 14. 500,000 points

char *s = "hello"; *(s+4) = '\0';

Is there a problem with this code?

A Complie error	Α	Compile error
-----------------	---	---------------

B No errors

C	Run-time error		
D	Possible run-time error		

The correct answer is C.

Question 15. One million points!

В
1
2
3
14

Given 2 files A and B with contents shown above, what will be the result of the following command (head -2 A; tail -2 B) | sort

A 2	C 12
3	14
12	2
14	3
B 2	D 3
12	14

Question 15. One million points!

В
1
2
3
14

Given 2 files A and B with contents shown above, what will be the result of the following command (head -2 A; tail -2 B) | sort

Α	2	С	12
	3		14
	12		2
	14		3
В	2	D	3
	12		14

The correct answer is C.

Well done!

You are ready for the midterm