

Midterm Review

Yoomin Song

Midterm Study Guide

These questions are here to help you review and practice some potential problems. There's no guarantee the questions on these slides will be similar to questions on the midterm. There are also a variety of topics we have covered that is not covered in this study guide.

Make sure to review slides, homework, textbooks, and labs as well. Good luck!:)

Linux Terminal Instructions

1. Compile a C++ program named “dictionary.cpp” into an executable file called “dictionary”
2. Run the executable file from the previous question
3. Run the default executable with input redirection from a text file named “dictionary.txt”

Note: The default executable is different based on the compiler. For this question, assume you are compiling using g++ on linux os.

Short Questions

1. Do the following math computations in C++:
 - a. $3 * 1 / 2$
 - b. $3.0 / (5/2)$
 - c. 2^3
 - d. $\sqrt{a^2+b^2}$
2. What is the output of the following code?

```
int main(){  
    int a = 2;  
    cout << (a == -1);  
}
```

Short Questions

1. What is the output of the following?

```
int main(){  
    string myArr[4] = {"Cat", "Bear", "Kangaroo", "Penguin"};  
    cout << myArr[1].size();  
}
```

2. Write a conditional that represents both x and y are out of range of [0,100]
3. Declare an size 60 integer array called scores and initialize each element as 1
4. What is the difference between pass-by-value and pass-by-reference?

What is the output of the following code?

```
# include <iostream>

using namespace std;

int main(){

    int value = 0;

    for(int i = 1; i < 6; i += 2){

        value += i;

    }

    cout << value;

}
```

What is the output of the following code?

```
# include <iostream>

using namespace std;

int foo(int n, int m);

int main(){

    int a = 2;

    int b = 3;

    for(int i = 1; i < 6; i += 2){

        b = foo(i,b);

        cout << a << " " << b << endl;

    }

    return 0;

}
```

. . . CONTINUED . . .

```
int foo(int n, int m) {

    static int x = 0;

    x = x + 2;

    n = n + 2;

    return (x + n + m);

}
```

Free Responses

1. Write a program that produces the following shape from given user input:

```
Enter size: 4
```

```
OXOX
```

```
XOXO
```

```
OXOX
```

```
XOXO
```

2. Write a function that takes three integers and returns the smallest integer.
3. What is the difference between formal and actual parameters?
4. What is an infinite loop?

Replace the comments with code

```
# include <iostream>

using namespace std;

int main(){

    int trunks[10] = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };

    int goten[10] = { 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 };

    // add all the elements of `trunks` and `goten` and store it in a new array called `gotenks`

    // in other words, gotenks[i] = trunks[i] + goten[i]

    // compute the sum of all elements in `gotenks` array and store it in a variable called `total`

    cout << total << endl;

}
```

What will the following code print?

```
int main() {  
  
    int a = 20;  
  
    int b = 30;  
  
    int *c = &a;  
  
    int *d = c;  
  
    d = &b;  
  
    b = *d + 10;  
  
    a = *d - *c;  
  
    cout << a << " " << b << endl;  
  
}
```

Knowing the output is good. However, you should be able to tell exactly what is happening on each line and how the values of each variable are changing.