

COSC 251 Study Guide
Exam #1
Spring 2012

Define procedural language, functional language and imperative language.

Name the 8 basic structures of a programming language.

What does it mean if a language is weakly typed?

What is the first major procedural language and who created it?

Give two major properties of a procedural language.

What is the basis of functional languages and who developed it?

What is the first major functional language and who created it?

Give an example of a declarative language.

Who was the primarily person responsible for C?

Why was C named C?

What is K&R C?

What is the difference between a long and an int?

Name three properties that C has due to C++.

What is the standard main signature in C?

Give an example of an if statement in C.

Define what each of these operators are: *, &, ++

In order to print something using cout, what all do I need (includes, etc)?

Is this a legal set of statements, and if so, what does it do:

```
int myarray[] = {0, 1, 2, 3, 4};  
int *ptr = myarray;  
cout<<*ptr++<<endl;  
cout<<*ptr<<endl;
```

Given the following code, what will be printed out and what will the memory diagram look like:

```
int *a = NULL;
a = new int;
a = 25;
printf(“%i”, *a);
```

Give the code to create a Fibonacci sequence recursively in C/C++. Your function should take in an integer that represents where we should stop the sequence and your output should be every number in the Fibonacci sequence to that point.

Create a class circle in C++. Be sure to include all assessors and mutators necessary. All of your functions must make sense and be complete. You will need to create both the header file information and the class definition file information.

Why is Python called Python?

What kind of typing does Python feature? Define that kind of typing.

List 5 primitive, built-in types in Python.

Give the code to create a loop that will print out every member of a list **mylist** in Python.

Give the code to define a function to print out the factorial of a given number in Python.

How do we use a list as a stack in Python? Give the appropriate calls for push, pop and top.

List and give examples of three control structures in Python.

Give the code to create a class called Student, with two variables, id and gpa, a constructor that sets id and gpa, and a method called printStudent that prints the student in the format id >> gpa

List and describe the compilation process from skeletal source to binary.

Create a CFG for $L = \{w \mid w \text{ is a palindrome}\}$. $\Sigma = \{a, b\}$

Create a CFG for $L = \{w \mid \text{the number of a's is at least the number of b's}\}$