C Language Concepts

CS 231

C - Java Comparison

Java	C
Object-oriented	Function oriented
Strongly typed	Can be overwritten
Polymorphism	None
Classes	Structures
Macros?	Macro preprocessor
Layered I/O model	Stream I/O

C - Java Comparison Cont.

Java	C
Automatic memory management	Function calls
References	Pointers
Call by value	Call by value
Exceptions and handling	Function returns negative

C Program

- *Collection of functions*
- *main() is starting function*
- *a.out is default name of executable*
- *Program may be written in one or multiple files*

Some Reserved Words

break	case	const	double
int	long	short	unsigned
struct	switch	void	for
while	do	else	register
typedef	union	goto	static

Primitive Types

- *char - 8 bits ASCII*
- *short - 16 bits*
- *int - native integer size, >= short size*
- *long - >= int size*
- *float - 32 bits*
- *double - 64 bits*

Signed and Unsigned

- *All int types support signed and unsigned*
- *Signed is default, unsigned must be specified*

Show functions.c

Show conditions.c

Live code with strings

Storage Classes

- *auto*
- *static*
- *extern*
- *register*

Storage Class auto

- *only legal for local variables, variables belonging to block*
- *scope is until the end of its block*
- *duration is during the execution of block*
- *almost never specified, as it is default for local variables*
- *storage is on stack in the stack frame of the function*

Storage Class static

- *When used with variable outside any block, variable is only visible within the file it is in - global to file*
- *When used with a local variable, variable is only visible within the block, but storage is permanent for duration of program, value remains between calls of block*

Storage Class extern

- *variable is visible to all files in program*
- *variable is global, must be defined outside of any block*
- *variable declaration and definition more fully describe use, described later*

Storage Class register

- *asks compiler to store variable in a register, not memory*
- *This is a request, compiler may choose not to do so*
- *only legal for variables local to a block*
- *register variable cannot have value updated through a pointer (a register has no address)*

Variable Definition and Declaration

- *Definition - tells compiler to allocate memory for variable*
- *Declaration - tells compiler information about variable*
- *extern int i;*
  - *declaration - i is defined somewhere else (probably in different file)*
- *Look at code st1.c and st2.c*