Princeton University
COS 217: Introduction to Programming Systems
C Statements

Statement Type	Statement Syntax	Examples

Expression Statement	*expression*;	i = 5;
		printf("Hello");
		5; /* valid, but nonsensical */

Declaration Statement	*modifiers datatype variable [= initialvalue][,variable [= initialvalue]]...;*	int i; int i, j; int i = 5, j = 6; const int i; static int i; extern int i;

Compound Statement (alias Block)	{*statement statement ... *}	{
		   int i;
		   i = 5;
		   ...
		}

If Statement	if (*integralexpr*) *statement*;
	if (*pointerexpr*) *statement*;
		if (i == 5)
		{
		   statement;
		   statement;
		}

Switch Statement	switch (*integralexpr*)
	{
	  case *integralconstant*: *statements*
	  case *integralconstant*: *statements*
	  default: *statements*
	}
		switch (i)
		{
		  case 1: *statement*; break;
		  case 2: *statement*; break;
		  default: *statement*;
		}

While Statement	while (*integralexpr*) *statement*	while (i < 5)
		{
		   statement;
		   statement;
		}

DoWhile Statement	do *statement* while (*integralexpr*);	do
		{
		   statement;
		   statement;
		} while (i < 5);

For Statement	for (*initexpr*; *integralexpr*; *increxpr*) *statement*	for (i = 0; i < 5; i++)
		{
		   statement;
		   statement;
		}

Return Statement	return; return *expr*;	return; return i + 5;

Break Statement	break;	while (i < 5)
		{
		   statement;
		   if (j == 6)
		      break;
		   statement;
		}

Continue Statement	continue;	while (i < 5)
		{
		   statement;
		   if (j == 6)
		      continue;
		   statement;
		}

Goto Statement	goto *label*;	mylabel:
		   ...
		   goto mylabel;
		   ...

Differences between C and Java:

Expression Statement:
        Java: Only expressions that have a side effect can be made into expression statements
        C: Any expression can be made into an expression statement
        Java: Has "final" variables
        C: Has "const" variables

Declaration Statement:
        Java: Compiletime error to use a local variable before specifying its value
        C: Runtime error to use a local variable before specifying its value

Compound Statement:
        Java: Declarations statements can be placed anywhere within compound statement
        C: Declaration statements must appear before any other type of statement within compound statement

If Statement
        Java: Controlling *expr* must be of type boolean
        C: Controlling *expr* must be of some integral type or a pointer (0 => FALSE, non-0 => TRUE)

While Statement
        Java: Controlling *expr* must be of type boolean
        C: Controlling *expr* must be of some integral type or a pointer (0 => FALSE, non-0 => TRUE)

DoWhile Statement
        Java: Controlling *expr* must be of type boolean
        C: Controlling *expr* must be of some integral type or a pointer (0 => FALSE, non-0 => TRUE)

For Statement
        Java: Controlling *expr* must be of type boolean
        C: Controlling *expr* must be of some integral type or a pointer (0 => FALSE, non-0 => TRUE)
        Java: Can declare loop control variable in *initexpr*
        C: Cannot declare loop control variable in *initexpr*

Break Statement
        Java: Also has "labeled break" statement
        C: Does not have "labeled break" statement

Continue Statement
        Java: Also has "labeled continue" statement
        C: Does not have "labeled continue" statement

Goto Statement
        Java: Not provided
        C: Provided (but don't use it!)