

# **CS 442/542 Project Check List**

# Project Check List

- Project video
- yacc4ForStudents
- Precedence and Associativity video

# Integer Expressions

## 30 Points

- Integer Literals, Variables
- Variables must be declared before they are used
- Assignment Statement
- Arithmetic Operators
  - +, - (binary subtraction), \*, /, %, - (unary minus)
  - ^ (exponentiation) You can assume the exponent is an expression whose value  $\geq 0$
- Relational Operators
  - <, <=, ==, >=, >, !=
- Boolean Operators
  - !, &&, ||
- All operators except ^ use the precedence and associativity rules of C. ^ is right associative and has lower precedence than unary minus and higher precedence than all the other operators. Parentheses are used to change order of operations.

# Integer I/O

## 30 Points

- `read(comma delimited list of variables)`
  - `read(x, y, z)`
- `print(comma delimited list of expressions);` a newline is not printed
  - `print(2*x, x^3*(z*w), abc/xyz, c)`
- `println(expression)`
  - `println(2)`
- `printspaces(expression)`
  - `printspaces(3*n)`

# Control Structures

## 40 Points

- if statements including optional else
- while loops
- for loops
  - Syntax similar to C but you can assume the first and third expressions are assignment statements. For example  $k = 1$  and  $k = k+1$
- Use C syntax and the C definition of true (non-zero) and false (zero).

# Arrays

## 20 points

- Single Dimension Arrays
  - Size of the array is declared at compile time
- Use C syntax
- Subscripts must be able to use constants and expressions. For example  $\text{nums}[2*i] = z * \text{nums}[j-3*k]$

# Functions

## 40 Points

- void and int functions
- Value parameters (the default for arrays can be pass by reference)
- Local Variables
- Recursion
- Reference parameters (extra 5 points)

# Boolean Expressions

## 20 Points

- Boolean literals and variables
- Assignment
- Print (print the words true or false) and read (use 1 for true and 0 for false)
- Variables must be declared before use
- Boolean functions and arrays



# Project

- You must do the items in the order shown (except Booleans; Booleans can be implemented any time after control structures) on the previous slides. For example before you do arrays you must have integer expressions, integer I/O and the control structures implemented. New features must work with the old features. For example when you implement arrays you must be able to read and print array elements.
- I will give you test programs written in C. You can translate these programs to your language (usually only the I/O will need to be changed)
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# Project Submission

- You will demonstrate your project during the last week of class (May 3 through May 7)
- 10 bonus points if you demonstrate before April 30
- To submit your project you will upload one zip file to Canvas. The file will contain your source code, a README file listing the parts of the project you completed, the test programs you ran and files containing the results (copy of the terminal window output of the test programs). There must be one file for each test program result and the name of the file must be the test program name .txt. For example the result of test program t1 must be t1.txt