

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

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 ≥ 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)`
 - `print(2*x, x^3*(z*w), abc/xyz, c)`
- `println`
 - `println`
- `printspaces(expression)`
 - `printspaces(3*n)`

Control Structures

40 Points

- if statements including optional else
- while loops
- for loops
- 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
- Local variables
- Recursion

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

Project

- You must do the items in the order shown 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)
-

Project Submission

- 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