Lex/YACC OR FLEX/BISON assignments:

1. All roll numbers ending with 1 or 6: Create a Calculator application that takes in integers and real numbers and performs operations of +, -, \*, /, ^ (where ^ is a power symbol). These should have proper precedence and associativity. Bracketing of expressions should be allowed. You will need to develop grammar for the same. Error should be reported for incorrect expressions.
2. All roll numbers ending with 2 or 7: Create a C pre-processor. Remove #define and replace it with the right-hand side. You will need to do this in 2-passes. In the first pass develop grammar for #define and parse the code to collect all #define in symbol table – first pass should only populate the symbol table. In the second pass replace the left-hand side with right-hand side of #define. Extra precaution to take to make sure that the #define’s can be dependent on each other. Recursive #define’s are an error.
3. All roll numbers ending with 3 or 8: Create a parser that takes a string as input and confirms that it satisfies the language [ (ab)\* | (a\*b\*) | (bb\*ba\*) | (b^na^n)]. It prints the longest pattern of (ab)\* observed by using the fact that Lex/Flex goes in for the longest possible pattern. It also prints the longest pattern of b^na^n. If the string does not confirm to the above pattern then an error is to be reported.
4. All roll numbers ending with 4 or 9: Converting a HTML page to tree structure and then printing the tree in breadth first mode. You can consider the HTML page to have only the following tags

head

body

title

a, href

font: size

center

h1, h2, h3, h4

ul, li, ol, ul, dl, dt, dd

u, b, i, em, tt, strong, small

Create a grammar for the HTML subset. Report error If the HTML document is malformed.

1. For roll numbers ending with 0 or 5: Create a parser that processes variable declarations in a C program and builds a symbol table. The symbol table has level in which the variable was declared. Assume simple variables like int, char, float, double. Array and Structure are an additional bonus. Report errors on invalid variable declarations.

int x, y; //Level 0

main () { int x; // Level 1

while () { float x; int y, z; //Level 2A

}

while () { int x; // Level 2B

} } }