

Computer Science 308-250B Homework #3

Due Wednesday March 6, 2002, 13:30

- 1) Show that for all integer $r > 0$, $\sum_{i=1..n} i^r$ is $O(n^{r+1})$.



- 2) Develop an algorithm and write a corresponding **Java** class that reads a String from the input and evaluates it as a mathematical expression made of **bits** (“0”, “1”), and binary operators such as AND “&”, XOR “^”, OR “|”, NEGATION “~”, and parentheses “(”, “)”. All priorities should be implemented according to the same rules as in JAVA. You will be provided with a JAVA object STACK that you may use in your programs.

Examples:

Input: “0&(1|0)”
Output: 0

Input: “1&0^1”
Output: 1

Input: “~0^(1^~1)”
Output: 0

Suggestion: to analyze the String use two Stacks; one to store bits and one to store operators.