

Course 2BA1: Hilary Term 2002.

Assignment V.

To be handed in by Wednesday 20th February, 2002.

Please include both name and student number on any work handed in.

1. Describe the formal language over the alphabet $\{0, 1\}$ generated by the context-free grammar whose non-terminals are $\langle S \rangle$ and $\langle T \rangle$, whose start symbol is $\langle S \rangle$ and whose productions are the following:

$$\langle S \rangle \rightarrow 0\langle S \rangle$$

$$\langle S \rangle \rightarrow \langle T \rangle$$

$$\langle T \rangle \rightarrow 1\langle T \rangle$$

$$\langle T \rangle \rightarrow 0$$

Write down the specification of this grammar in Backus-Naur form. Is this context-free grammar a regular grammar?

2. Devise a regular grammar to generate the language over the alphabet $\{a, b, c\}$ consisting of all finite strings, such as ab , aab and $aaaabccc$, that consist of one or more occurrences of the character a , followed by a single occurrence of the character b , optionally followed by one or more occurrences of the character c .