Universidad de los Andes

ISIS-1106 Lenguajes y Máquinas
Practical Quiz 4
Fecha: November 14, 2021

Individual Work

1. [100 %]

Use GOLD to implement a PDA that recognizes the language described below:
The language over $\{2,5,3,\times,x,q,r,=,+,\div\}$ such that its strings are of the form:

$$x^n \div d = q^{n \div d} \times d + r^{n \bmod d}$$

where $d \in \{2,3,5\}$,
Notice that the strings in the language would be made up of the following substrings in order:

- n x's
- symbol $\div$
- d: a digit that can be 2, 3, or 5
- symbol =
- m q's, where m is the result of the interger division: $n \div d$
- symbol $\times$
- d again
- symbol +
- p r's, where p is the remainder of n divided by d. p must always be less than d.

If the remainder is zero, + should not appear.

Strings in the language

- $xxxxxx \div 2 = qqq \times 2$
- $xxxxxx \div 5 = q \times 5 + r$
- $xxxxxxxxxxxx \div 5 = qq \times 5 + rr$

Strings that are not in the language

- $xxxxxx \div 2 = qq \times 3$
- $xxxxx \div 2 = q \times 2 + rrr$