uc3m | Universidad Carlos III de Madrid

DEPARTMENT OF COMPUTER SCIENCE
CARLOS III UNIVERSITY OF MADRID

Computer Science
Language Processors

Rules

- The duration of the test is **30 minutes**
- Questions will not be answered during the test
- One cannot re-enter the classroom after leaving it
- The answers must be written using a pen (not a pencil)

1.- Find a regular expression corresponding to the language of strings of even lengths over the alphabet of {a, b}.

2.- Given the following grammar that defines a language for a specific processor

```
program     → functions main
            | main
functions   → functions function
            | function
function    → 'function' ident '()' block
main        → 'main' block
block       → '{' sentences '}'
sentences   → sentences sentence
            | sentence
sentence    → ident '=' expression ';'
            | block
expression  → expression '[' ident ']' ident
            | expression '?' ident ':' ident
            | expression '+' const
            | '*' expression
            | '&' expression
            | ident
            | '[' ident ']'
            | const
ident       → ident letter
            | letter
letter      → 'a' | 'b' | ··· | 'z'
const       → num '.' num
num         → '0' | '1' | ··· | '9'
```

Obtain the table of tokens with the maximum abstraction level for the complete process of translation.

Number	Token	Pattern	Attributes
...		...	...