

<https://github.com/DragosteSergiu/Facultate/blob/main/Lab6FLCD.py>

class LR0Item extends the class Rule and it is used to represent a dot production.

- It has a field 'dot_position' which is represented as an integer and stores the position of the '.' in production.
- It has the field 'left_side' and 'right_side' of the parent class.
- It overrides the getters and setters of the parent class, and has getters and setters for the field 'dot_position'.
- It overrides the method which adds an element to the field 'right_side'.
- It has a method which returns the element from the field 'right_side' from position 'dot_position'.
- The class overrides the methods '__str__()' and '__eq__()' of the parent class.
- It also overrides the method '__hash__()' in order to be a hashable object.

Class LR0State is used to represent a state of the LR0Parser.

- It has three fields which are 'number', 'items', 'transitions'.
- The field 'number' is used to recognize each state.
- The field 'items' is represented as a list of LR0Items and it is used to store all items of a state.
- The field 'transitions' is represented as a map with a tuple (LR0Items, terminal/non-terminal) as key and a LR0State as value.
- It has getters and setters for its fields.
- It has the method 'add_items()' which adds an item to the field 'items'.
- It has the method 'add_transition()' which adds an element to the field 'transitions'.
- It has the method 'update_transition()' which updates an element from the field 'transitions'.
- The class overrides the method '__str__()' and '__eq__()'
- The class implements the method 'compare_items()' which compares the field 'items' with a list given as parameter.

Class LR0Parser is used to represent the actual parser.

- It has two fields which are 'grammar' and 'canonical_collection'.
- The field 'grammar' stores an object of type Grammar.
- The field 'canonical_collection' is represented as a list of LR0State objects and it is used to store all states of the grammar.
- The method 'enhance_grammar()' is used to add a new rule in the grammar.
- The method 'closure()' takes as parameter an object of type LR0Item and returns a list of object of type LR0Item.
- The method 'goTo()' takes as parameter an object of type LR0Item and returns another object of type LR0Item incrementing the field 'dot_position'.
- It implements the method 'create_canonical_collection()' which creates the states that are stored in the field 'canonical_collection'.
- It contains the method 'canonical_collection_to_string()' which returns the value of field 'canonical_collection' as a string.