RuleNumException -serialVersionUID: long +RuleNumException(min: int, max:int) CellularAutomatonNotFoundException -serialVersionUID: long +CellularAutomatonNotFoundException(msg: String)

```
Generation
-cellStates: boolean[]
+Generation(states: boolean...)
+Generation(states: String, trueSymbol: char)
+getState(idx: int): boolean
+getStates(): boolean[]
+getStates(falseSymbol: char, trueSymbol: char): String
+size(): int
```

```
Automaton
-rule: Rule
-generations: ArrayList<Generation>
+falseSymbol = '0': char
+trueSymbol = '1': char
#Automaton(ruleNum: int, initial: Generation)
#Automaton(filename: String)
+evolve(numSteps: int): int
+getGeneration(stepNum: int): Generation
+getCurrentGeneration(): Generation
+qetRuleNum(): int
+getTotalSteps(): int
+saveEvolution(filename: String): void
+toString(): String
+ruleTableString(): String
#createRule(ruleNum: int): Rule
+createAutomaton(
  ca: CellularAutomaton,
 ruleNum: int,
 initial: Generation): Automaton
```

```
Rule
-ruleNum: int
...
#Rule(ruleNum: int)
+getRuleNum(): int
+getNeighborhood(idx: int, gen: Generation): boolean[]
+evolve(neighborhood: boolean[]): boolean
+evolve(gen: Generation): Generation
+ruleTableString(falseSymbol: char, trueSymbol: char): String
+getNeighborhoodByRadius(
   idx: int, radius: int, gen: Generation): boolean[]
...
```

```
Application
-NUM_EXPECTED_ARGS = 6: int
-IDX_CA = 0: int
-IDX_RULE_NUM = 1: int
-IDX FALSE SYMBOL = 2: int
-IDX_TRUE_SYMBOL = 3: int
-IDX_INITIAL_GENERATION = 4: int
-IDX_NUM_EVOLVE = 5: int
-ARG_NAMES =
  "ca rule-num false-symbol true-symbol " +
  "initial-generation num-evolutions": String
-USAGE_FMT_STRING_CLASS =
  "Usage: java Application " + ARG_NAMES: String
-USAGE_FMT_STRING_JAR =
  "Usage: java -jar %s " + ARG_NAMES: String
-appArqs: Strinq[]
+Application(args: String[])
-validateNumArgs(args: String[]): void
-throwRuntimeExceptionWithUsageMessage(): void
-runningAsJar(): boolean
-parseArgs(args: String[]): void
+run(): void
+main(args: String[]): void
```

```
#TotalisticAutomaton

#TotalisticAutomaton(ruleNum: int, initial: Generation)

#TotalisticAutomaton(filename: String)

#createRule(ruleNum: int): Rule
```

```
#ElementaryAutomaton(ruleNum: int, initial: Generation)
#ElementaryAutomaton(filename: String)
#createRule(ruleNum: int): Rule
```

ElementaryAutomaton

```
#ElementaryRule(ruleNum: int)
+evolve(neighborhood: boolean[]): boolean
+getNeighborhood(idx: int, gen: Generation): boolean[]
+ruleTableString(falseSymbol: char, trueSymbol: char): String
```

```
#TotalisticRule

#TotalisticRule(ruleNum: int)

+evolve(neighborhood: boolean[]): boolean

+getNeighborhood(idx: int, gen: Generation): boolean[]

+ruleTableString(falseSymbol: char, trueSymbol: char): String
```