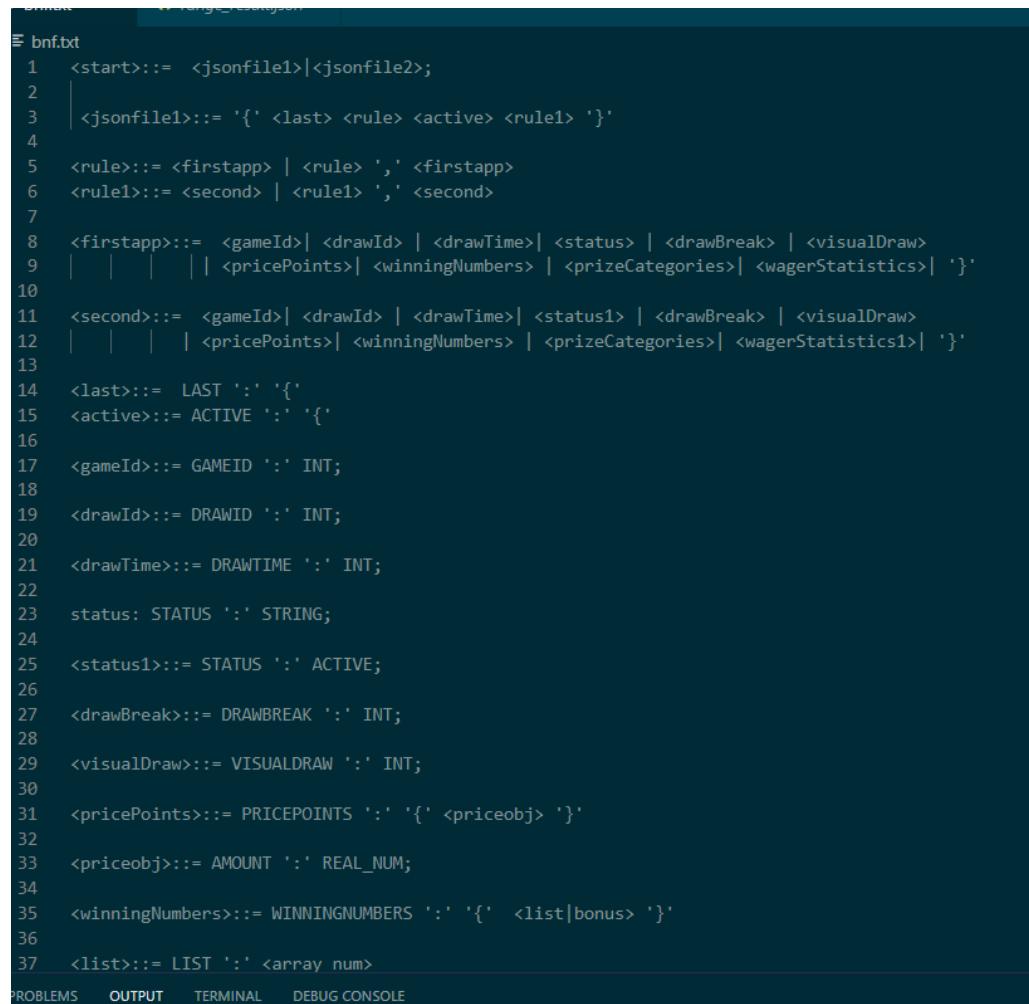


ΑΡΧΕΣ ΓΛΩΣΣΩΝ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΥ PROJECT 2021-2022

1^ο ερώτημα:

a) BNF γλώσσας:



The screenshot shows a code editor window with a dark theme. The title bar says "bpf.txt". The code is a BNF grammar definition. It starts with a non-terminal <start> which can be either <jsonfile1> or <jsonfile2>. <jsonfile1> is defined as a brace-enclosed sequence of terminals <last>, <rule>, <active>, and <rule1>. <rule> and <rule1> both have two possible definitions: <firstapp> followed by a comma and another <rule>, or <second> followed by a comma and another <rule1>. <firstapp> is defined as a sequence of terminals <gameId>, <drawId>, <drawTime>, <status>, <drawBreak>, and <visualDraw>, separated by vertical bars and enclosed in braces. <second> is also defined as a sequence of terminals <gameId>, <drawId>, <drawTime>, <status1>, <drawBreak>, and <visualDraw>, separated by vertical bars and enclosed in braces. <last> is defined as the terminal "LAST". <active> is defined as the terminal "ACTIVE". Terminals are defined as follows: <gameId> is GAMEID, <drawId> is DRAWID, <drawTime> is DRAWTIME, <status> is STATUS, <status1> is STATUS followed by ACTIVE, <drawBreak> is DRAWBREAK, <visualDraw> is VISUALDRAW, <pricePoints> is PRICEPOINTS followed by a brace-enclosed sequence of <priceobj>, <priceobj> is AMOUNT followed by REAL_NUM, <winningNumbers> is WINNINGNUMBERS followed by a brace-enclosed sequence of <list> or <bonus>, and <list> is LIST followed by <array num>. The bottom of the editor shows tabs for PROBLEMS, OUTPUT, TERMINAL, and DEBUG CONSOLE.

```
1  <start> ::= <jsonfile1> | <jsonfile2>;
2  |
3  | <jsonfile1> ::= '{' <last> <rule> <active> <rule1> '}'
4  |
5  <rule> ::= <firstapp> | <rule> ',' <firstapp>
6  <rule1> ::= <second> | <rule1> ',' <second>
7  |
8  <firstapp> ::= <gameId> | <drawId> | <drawTime> | <status> | <drawBreak> | <visualDraw>
9  |   |   |   | <pricePoints> | <winningNumbers> | <prizeCategories> | <wagerStatistics> | '}'
10 |
11 <second> ::= <gameId> | <drawId> | <drawTime> | <status1> | <drawBreak> | <visualDraw>
12 |   |   |   | <pricePoints> | <winningNumbers> | <prizeCategories> | <wagerStatistics1> | '}'
13 |
14 <last> ::= LAST ':'
15 <active> ::= ACTIVE ':'
16 |
17 <gameId> ::= GAMEID ':' INT;
18 |
19 <drawId> ::= DRAWID ':' INT;
20 |
21 <drawTime> ::= DRAWTIME ':' INT;
22 |
23 status: STATUS ':' STRING;
24 |
25 <status1> ::= STATUS ':' ACTIVE;
26 |
27 <drawBreak> ::= DRAWBREAK ':' INT;
28 |
29 <visualDraw> ::= VISUALDRAW ':' INT;
30 |
31 <pricePoints> ::= PRICEPOINTS ':' '{' <priceobj> '}'
32 |
33 <priceobj> ::= AMOUNT ':' REAL_NUM;
34 |
35 <winningNumbers> ::= WINNINGNUMBERS ':' '{' <list> | <bonus> '}'
36 |
37 <list> ::= LIST ':' <array num>
```

```
= bnf.txt
  bnf.txt
35 <winningNumbers> ::= WINNINGNUMBERS ': ' '{' <list|bonus> '}'
36
37 <list> ::= LIST ':' <array_num>
38
39 <bonus> ::= BONUS ': ' '{' INT '}'
40
41 <array_num> ::= '[' <value> ']'
42 <value> ::= INT ','|
43 | INT ','|
44 | INT ','|
45 | INT ','|
46 | INT
47 ;
48
49 <prizeCategories> ::= PRIZECATEGORIES ': ' '[' <rule2> ']'
50
51 <rule2> ::= <prizeobj> ','|
52 | <prizeobj1> ','|
53 | <prizeobj1> ','|
54 | <prizeobj1> ','|
55 | <prizeobj1> ','|
56 | <prizeobj1> ','|
57 | <prizeobj1> ','|
58 | <prizeobj1>
59 ;
60
61 <prizeobj> ::= '{'|
62 | | | <id> ','|

```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
= bnf.txt
  bnf.txt
58 ; <prizeobj1>
59 ;
60
61 <prizeobj> ::= '{'|
62 | | | <id1> ','|
63 | | | <divident> ','|
64 | | | <winners> ','|
65 | | | <distributed> ','|
66 | | | <jackpot> ','|
67 | | | <fixed> ','|
68 | | | <categoryType> ','|
69 | | | <gameType> ','|
70 | | | <minimumDistributed>
71 | | | '}'
72 ;
73 prizeobj1: '{'|
74 | | | <id> ','|
75 | | | <divident> ','|
76 | | | <winners> ','|
77 | | | <distributed> ','|
78 | | | <jackpot> ','|
79 | | | <fixed> ','|
80 | | | <categoryType> ','|
81 | | | <gameType>
82 | | | '}'
83 ;
84
85 <id> ::= ID ',' INT;
```

Help • bnf.txt - GitHub - Visual Studio Code

☰ bnf.txt ●

☰ bnf.txt

```
86 <id1> ::= ID ',' INT;
87 <divident> ::= DIVIDENT ':' REAL_NUM;
88 <winners> ::= WINNERS ':' INT;
89 <distributed> ::= DISTRIBUTED ':' REAL_NUM;
90 <jackpot> ::= JACKPOT ':' REAL_NUM;
91 <fixed> ::= FIXED ':' REAL_NUM;
92 <categoryType> ::= CATEGORYTYPE ':' INT;
93 <gameType> ::= GAMETYPE ':' STRING;
94 <minimumDistributed> ::= MINIMUMDISTRIBUTED ':' REAL_NUM;
95 <wagerStatistics> ::= WAGERSTATISTICS_N : '{' '<wagerobj>' '}' ','
96 <wagerStatistics1> ::= WAGERSTATISTICS_S : '{' '<wagerobj>' '}' '
97 <wagerobj> ::= COLUMNS ':' INT ','  
100 | WAGERS ':' INT ','  
101 | ADDON '[' ']'  
102 ;  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138
```

```
102 ;  
103  
104  
105 <jsonfile2> ::= '{' <content> <totalPages> <totalElements> <last2> <numberOfElements> <sort> <first> <size> <number> '}'  
106  
107 <content> ::= CONTENT ':' '[' <rule5> <rule5> <rule5> <rule5> <rule5> <rule6> <rule6> ']' ','  
108  
109 <rule5> ::= <one>|<rule6> ',' <one>;  
110  
111 <rule6> ::= <two>|<rule6> ',' <two>;  
112  
113 <one> ::= '{' |<gameId> | <drawId> | <drawTime> | <status> | <drawBreak> | <visualDraw>  
114 | | <pricePoints> | <winningNumbers1> | <prizeCategories> | <wagerStatistics> | '}'  
115 ;  
116 <two> ::= '{' |<gameId> | <drawId> | <drawTime> | <status> | <drawBreak> | <visualDraw>  
117 | | <pricePoints> | <winningNumbers1> | <prizeCategories> | <wagerStatistics1> | '}'  
118 ;  
119  
120 <winningNumbers1> ::= WINNINGNUMBERS ':' '{' <list1>|<bonus1> '}'  
121  
122 <list1> ::= LIST ':' '[' <value1> ']'  
123  
124 <bonus1> ::= BONUS ':' '[' INT ']'  
125  
126 <value1> ::= INT ','  
127 | | | INT ','  
128 | | | INT ','  
129 | | | INT ','  
130 | | | INT  
131 ;  
132 <totalPages> ::= TOTALPAGES ':' INT ','  
133 <totalElements> ::= TOTALELEMENTS ':' INT ','  
134 <last2> ::= LAST ':' BOOLEAN ','  
135 <numberOfElements> ::= NUMBEROFELEMENTS ':' INT ','  
136 <sort> ::= SORT '[' '<sortobj>' ']' ','  
137  
138 <sortobj> ::= '{'
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
bnf.txt
122 <list1> ::= LIST ':' '[' <value1> ']'
123
124 <bonus1> ::= BONUS ':' '[' INT ']'
125
126 <value1> ::= INT ','|
127 | INT ','|
128 | INT ','|
129 | INT ','|
130 | INT
131 ;
132 <totalPages> ::= TOTALPAGES ':' INT ','|
133 <totalElements> ::= TOTALELEMENTS ':' INT ','|
134 <last2> ::= LAST ':' BOOLEAN ','|
135 <numberofElements> ::= NUMBEROFELEMENTS ':' INT ','|
136 <sort> ::= SORT ':' '[' <sortobj> ']' ','|
137
138 <sortobj> ::= '{'|
139 | <direction> ','|
140 | <property> ','|
141 | <ignoreCase> ','|
142 | <>nullHandling> ','|
143 | <descending> ','|
144 | <ascending>
145 |
146 ;
147 <direction> ::= DIRECTION ':' STRING;
148 <property> ::= PROPERTY ':' STRING;
149 <ignoreCase> ::= IGNORECASE ':' BOOLEAN;
150 <>nullHandling> ::= NULLHANDLING ':' STRING;
151 <descending> ::= DESCENDING ':' BOOLEAN;
152 <ascending> ::= ASCENDING ':' BOOLEAN;
153
154 <first> ::= FIRST ':' BOOLEAN ','|
155 <size> ::= SIZE ':' INT ','|
156 <number> ::= NUMBER ':' INT;
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

b) ΕΠΙΤΥΧΗΜΕΝΗ ΕΚΤΕΛΕΣΗ last_result.json:

ΕΝΤΟΛΕΣ ΓΙΑ ΕΚΤΕΛΕΣΗ:

bison -d parser.y

flex parser.l

gcc -o run lex.yy.c parser.tab.c -lfl

./run last_result.json

```
Activities Terminal Mai 20 02:01
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ bison -d parser.y
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ flex parser.l
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ gcc -o run lex.yy.c parser.tab.c -lfl
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ ./run last_result.json
{
    "last": {
        "gameId":5104,
        "drawId":2390,
        "drawTime":1620363200000,
        "state": "Results",
        "drawBreak":18000000,
        "visualDraw":2390,
        "pricePoints": [
            "amount":0.5
        ],
        "winningNumbers": {
            "list": [
                1,
                29,
                26,
                24,
                17
            ],
            "bonus": [
                6
            ]
        },
        "prizeCategories": [

```

```
Activities Terminal Mai 20 02:02
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ 
),
        "prizeCategories": [
            {
                "id":1,
                "dividend":0.0,
                "winners":0,
                "distributed":356871.53,
                "jackpot":748954.15,
                "fixed":0.0,
                "categoryType":0,
                "gameType":"Normal",
                "minimumDistributed":0.0
            },
            {
                "id":2,
                "dividend":22575.97,
                "winners":4,
                "distributed":55178.93,
                "jackpot":55124.97,
                "fixed":0.0,
                "categoryType":0,
                "gameType":"Normal"
            },
            {
                "id":3,
                "dividend":2500.0,
                "winners":20,
                "distributed":50000.0,
                "jackpot":0.0,

```

```
Activities Terminal Mai 20 02:02
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ 
                "gameType":"Normal"
            },
            {
                "id":3,
                "dividend":2500.0,
                "winners":20,
                "distributed":50000.0,
                "jackpot":0.0,
                "fixed":2500.0,
                "categoryType":1,
                "gameType":"Normal"
            },
            {
                "id":4,
                "dividend":50.0,
                "winners":326,
                "distributed":10300.0,
                "jackpot":0.0,
                "fixed":50.0,
                "categoryType":1,
                "gameType":"Normal"
            },
            {
                "id":5,
                "dividend":50.0,
                "winners":816,
                "distributed":40800.0,
                "jackpot":0.0,
                "fixed":50.0,

```

```
Activities Terminal Mai 20 02:02
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ 
                "gameType":"Normal"
            },
            {
                "id":6,
                "dividend":2.0,
                "winners":16634,
                "distributed":3268.0,
                "jackpot":0.0,
                "fixed":2.0,
                "categoryType":1,
                "gameType":"Normal"
            },
            {
                "id":7,
                "dividend":2.0,
                "winners":10341,
                "distributed":20682.0,
                "jackpot":0.0,
                "fixed":2.0,
                "categoryType":1,
                "gameType":"Normal"
            },
            {
                "id":8,
                "dividend":1.5,
                "winners":49233,
                "distributed":73849.5,
                "jackpot":0.0,
                "fixed":1.5,

```

```
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
[{"jackpot":0.0,"fixed":1.5,"categoryType":1,"gameType":"Normal"},], "wagerStatistics":{ "columns":2866438, "wagers":503579, "addOn":[] } }, "active": { "gameId":5104, "drawId":2391, "drawTime":1642536000000, "status":"active", "drawPrice":1800000, "visualDraw":2391, "pricePoints":{ "amount":0.5 }, "prizeCategories": [ { "id":1, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":1105825.68, "prizeCategory": { "id":1, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":1105825.68, "categoryType":1, "gameType":"Normal", "minimumDistributed":1300000.0 } }, { "id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minimumDistributed":0.0 } ], "prizeCategories": [ { "id":1, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":1105825.68, "categoryType":0, "gameType":"Normal", "minimumDistributed":1300000.0 } ], "id":3, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "categoryType":0, "gameType":"Normal", "minimumDistributed":0.0 } ]},
```

```

Activities Terminal Mai 20 02:03
dionusia@dionusia-VirtualBox: ~/Documents/arkes
{
    "id":4,
    "divident":0.0,
    "winners":0,
    "distributed":0.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType": "Normal"
},
{
    "id":5,
    "divident":0.0,
    "winners":0,
    "distributed":0.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType": "Normal"
},
{
    "id":6,
    "divident":0.0,
    "winners":0,
    "distributed":0.0,
    "jackpot":0.0,
    "fixed":2.0,
    "categoryType":1,
    "gameType": "Normal"
},
{
    "id":7,
    "divident":0.0,
    "winners":0,
    "distributed":0.0,
    "jackpot":0.0,
    "fixed":2.0,
    "categoryType":1,
    "gameType": "Normal"
},
{
    "id":8,
    "divident":0.0,
    "winners":0,
    "distributed":0.0,
    "jackpot":0.0,
    "fixed":1.5,
    "categoryType":1,
    "gameType": "Normal"
},
],
"wagerStatistics":[
    {
        "columns":0,
        "wagers":0,
        "addon":[]
    }
]
}
successfully open and read inputFile!
dionusia@dionusia-VirtualBox:~/Documents/arkes$
```

Screenshots από αλλαγή εμφάνισης last-active:

```

Activities Text Editor Mai 20 02:04
dionusia@dionusia-VirtualBox: ~/Documents/arkes
parser.l parser.y range_result.json last_result.json
1 {
2     "active": {
3         "gameId": 5104,
4         "drawId": 2390,
5         "drawTime": 1642363200000,
6         "startBreak": 1642363200000,
7         "drawBreak": 1642363200000,
8         "visualDraw": 2390,
9         "pricePoints": {
10             "amounts": 0.5
11         },
12         "winningNumbers": {
13             "list": [
14                 1,
15                 29,
16                 26,
17                 24,
18                 17
19             ],
20             "bonus": [
21                 6
22             ]
23         },
24         "prizeCategories": [
25             {
26                 "id": 1
27             }
28         ]
29     }
30 }
```

Activities Terminal Mai 20 02:04

```

dionusia@dionusia-VirtualBox: ~/Documents/arkes
[STOP: Error detected at line: 2
dionusia@dionusia-VirtualBox:~/Documents/arkes$
```

Screenshots από έλλειψη κόμματος:

The screenshot shows a desktop environment with a terminal window and a code editor window.

Code Editor (Text Editor):

```

Activities   Text Editor   Mai 20 02:05
Open ...   Screenshot captured
You can paste the image from the clipboard.
parser.l    result.json x
1 {
2   "last": {
3     "gameId": 5104,
4     "drawId": 2390,
5     "drawTime": "1642363200000",
6     "status": "results",
7     "drawBreak": 1800000,
8     "visualDraw": 2390,
9     "pricePoints": [
10       {
11         "amount": 0.5
12       },
13       "winningNumbers": {
14         "list": [
15           1,
16           29,
17           26,
18           24,
19           17
20         ],
21         "bonus": [
22           6
23       ],
24       "prizeCategories": [
25         {
26           ...
27         }
28       ]
29     }
30   }
31 }

```

Terminal:

```

Activities   Terminal   Mai 20 02:05
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ ./run last_result.json
{
  STOP: Error detected at line: 2
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ ./run last_result.json
{
  "last": {
    "gameId": 5104,
    "drawId": 2390,
    "drawTime": "1642363200000",
    "status": "results" STOP: Error detected at line: 7
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ 

```

2^ο ερώτημα:

Επιτυχημένη εκτέλεση range_result.json:

The screenshot shows a desktop environment with two terminal windows.

Terminal 1:

```

Activities   Terminal   Mai 29 17:14
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ ./run range_result.json
{
  "content": [
    {
      "gameId": 5104,
      "drawId": 2414,
      "drawTime": "1647374400000",
      "status": "results",
      "drawBreak": 1800000,
      "visualDraw": 2414,
      "pricePoints": [
        {
          "amount": 0.5
        },
        "winningNumbers": {
          "list": [2, 38, 23, 25, 32],
          "bonus": [9]
        },
        "prizeCategories": [
          {
            "id": 1,
            "dividend": 0.0,
            "winners": 0,
            "distributed": 253146.35,
            "jackpot": 1089396.17,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal",
            "minimumDistributed": 0.0
          },
          ...
        ]
      }
    }
  ]
}

```

Terminal 2:

```

Activities   Terminal   Mai 29 17:15
dionusia@dionusia-VirtualBox: ~/Documents/arkes$ ./run range_result.json
{
  "content": [
    {
      "gameId": 5104,
      "drawId": 2414,
      "drawTime": "1647374400000",
      "status": "results",
      "drawBreak": 1800000,
      "visualDraw": 2414,
      "pricePoints": [
        {
          "amount": 0.5
        },
        "winningNumbers": {
          "list": [2, 38, 23, 25, 32],
          "bonus": [9]
        },
        "prizeCategories": [
          {
            "id": 1,
            "dividend": 0.0,
            "winners": 0,
            "distributed": 253146.35,
            "jackpot": 1089396.17,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal",
            "minimumDistributed": 0.0
          },
          ...
        ]
      }
    }
  ]
}

```

```
        "gameType": "Normal"
    },
    {
        "id": 5,
        "divIdent": 50.0,
        "winners": 803,
        "distributed": 40150.0,
        "jackpot": 0.0,
        "fixed": 50.0,
        "categoryType": 1,
        "gameType": "Normal"
    },
    {
        "id": 6,
        "divIdent": 2.0,
        "winners": 11148,
        "distributed": 22296.0,
        "jackpot": 0.0,
        "fixed": 2.0,
        "categoryType": 1,
        "gameType": "Normal"
    },
    {
        "id": 7,
        "divIdent": 2.0,
        "winners": 171,
        "distributed": 19834.0,
        "jackpot": 0.0,
        "fixed": 2.0,
        "categoryType": 1,
        "gameType": "Normal"
    }
]
```

```
        "gameType": "Normal"
    },
    {
        "id": 8,
        "divIdent": 1.5,
        "winners": 46429,
        "distributed": 69643.5,
        "jackpot": 0.0,
        "fixed": 1.5,
        "categoryType": 1,
        "gameType": "Normal"
    },
    "wagerStatistics": {
        "columns": 2033304,
        "wagers": 359687,
        "addon": []
    }
},
{
    "gameId": 5104,
    "drawId": 2413,
    "drawTime": 1647201600000,
    "status": "results",
    "drawBreak": 1800000,
    "visualDraw": 2413,
    "pricePoints": [
        {
            "amount": 0.5
        }
    ],
    "winningNumbers": [
        {
            "list": [36, 44, 16, 31, 38],
            "bonus": [8]
        }
    ],
    "prizeCategories": [
        {
            "id": 1,
            "divIdent": 0.0,
            "winners": 0,
            "distributed": 354740.96,
            "jackpot": 7734655.21,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal",
            "minimumDistributed": 0.0
        },
        {
            "id": 2,
            "divIdent": 0.0,
            "winners": 0,
            "distributed": 54849.51,
            "jackpot": 0.0,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal"
        },
        {
            "id": 3,
            "divIdent": 2500.0,
            "winners": 17,
            "distributed": 42500.0,
            "jackpot": 0.0,
            "fixed": 2500.0,
            "categoryType": 1,
            "gameType": "Normal"
        },
        {
            "id": 4,
            "divIdent": 50.0,
            "winners": 271,
            "distributed": 13550.0,
            "jackpot": 0.0,
            "fixed": 50.0,
            "categoryType": 1,
            "gameType": "Normal"
        },
        {
            "id": 5,
            "divIdent": 50.0,
            "winners": 796,
            "distributed": 39800.0,
            "jackpot": 0.0,
            "fixed": 50.0,
            "categoryType": 1,
            "gameType": "Normal"
        }
    ]
}
```

```
        "amount": 0.5
    },
    "winningNumbers": [
        {
            "list": [36, 44, 16, 31, 38],
            "bonus": [8]
        }
    ],
    "prizeCategories": [
        {
            "id": 1,
            "divIdent": 0.0,
            "winners": 0,
            "distributed": 354740.96,
            "jackpot": 7734655.21,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal",
            "minimumDistributed": 0.0
        },
        {
            "id": 2,
            "divIdent": 0.0,
            "winners": 0,
            "distributed": 54849.51,
            "jackpot": 0.0,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal"
        },
        {
            "id": 3,
            "divIdent": 2500.0,
            "winners": 17,
            "distributed": 42500.0,
            "jackpot": 0.0,
            "fixed": 2500.0,
            "categoryType": 1,
            "gameType": "Normal"
        },
        {
            "id": 4,
            "divIdent": 50.0,
            "winners": 271,
            "distributed": 13550.0,
            "jackpot": 0.0,
            "fixed": 50.0,
            "categoryType": 1,
            "gameType": "Normal"
        },
        {
            "id": 5,
            "divIdent": 50.0,
            "winners": 796,
            "distributed": 39800.0,
            "jackpot": 0.0,
            "fixed": 50.0,
            "categoryType": 1,
            "gameType": "Normal"
        }
    ]
}
```

```
        "amount": 0.5
    },
    "winningNumbers": [
        {
            "list": [36, 44, 16, 31, 38],
            "bonus": [8]
        }
    ],
    "prizeCategories": [
        {
            "id": 1,
            "divIdent": 0.0,
            "winners": 0,
            "distributed": 354740.96,
            "jackpot": 7734655.21,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal",
            "minimumDistributed": 0.0
        },
        {
            "id": 2,
            "divIdent": 0.0,
            "winners": 0,
            "distributed": 54849.51,
            "jackpot": 0.0,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal"
        },
        {
            "id": 3,
            "divIdent": 2500.0,
            "winners": 17,
            "distributed": 42500.0,
            "jackpot": 0.0,
            "fixed": 2500.0,
            "categoryType": 1,
            "gameType": "Normal"
        },
        {
            "id": 4,
            "divIdent": 50.0,
            "winners": 271,
            "distributed": 13550.0,
            "jackpot": 0.0,
            "fixed": 50.0,
            "categoryType": 1,
            "gameType": "Normal"
        },
        {
            "id": 5,
            "divIdent": 50.0,
            "winners": 796,
            "distributed": 39800.0,
            "jackpot": 0.0,
            "fixed": 50.0,
            "categoryType": 1,
            "gameType": "Normal"
        }
    ]
}
```

```
Activities Terminal Mai 29 17:16
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
        },
        {
            "id":6,
            "dividend":2.0,
            "winners":11150,
            "distributed":22300.0,
            "jackpot":0.0,
            "fixed":2.0,
            "categoryType":1,
            "gameType":"Normal"
        },
        {
            "id":7,
            "dividend":2.0,
            "winners":112080,
            "distributed":24160.0,
            "jackpot":0.0,
            "fixed":2.0,
            "categoryType":1,
            "gameType":"Normal"
        },
        {
            "id":8,
            "dividend":1.5,
            "winners":68804,
            "distributed":103206.0,
            "jackpot":0.0,
            "fixed":1.5,
            "categoryType":1,
            "gameType":"Normal"
        }
    ],
    "wagerStatistics":{
        "columns":2849325,
        "wagers":498453,
        "addon":[]
    }
},
{
    "gameId":5104,
    "drawId":2412,
    "drawTime":1646942400000,
    "status":"results",
    "drawBreak":1880000,
    "visualDraw":2412,
    "pricePoints":{
        "amount":0.5
    },
    "winningNumbers":{
        "list":[23,16,17,27,40],
        "bonus":16
    },
    "prizeCategories": [
        {
            "id":1,
            "dividend":0.0,
            "winners":0,
            "distributed":230875.17,
            "jackpot":519124.83,
            "fixed":0.0,
            "categoryType":0,
            "gameType":"Normal",
            "minnumDistributed":0.0
        },
        {
            "id":2,
            "dividend":56795.63,
            "winners":2,
            "distributed":35697.57,
            "jackpot":77893.7,
            "fixed":10.0,
            "categoryType":0,
            "gameType":"Normal"
        },
        {
            "id":3,
            "dividend":2500.0,
            "winners":7,
            "distributed":17500.0,
            "jackpot":0.0,
            "fixed":2500.0,
            "categoryType":1,
            "gameType":"Normal"
        }
    ]
},
{
    "id":4,
    "dividend":50.0,
    "winners":191,
    "distributed":9550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":5,
    "dividend":50.0,
    "winners":571,
    "distributed":28550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":6,
    "dividend":2.0,
    "winners":9782,
    "distributed":19564.0,
    "jackpot":0.0,
    "fixed":2.0,
    "categoryType":1,
    "gameType":"Normal"
}
```

```
Activities Terminal Mai 29 17:16
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
        },
        {
            "id":7,
            "dividend":2.0,
            "winners":112080,
            "distributed":24160.0,
            "jackpot":0.0,
            "fixed":2.0,
            "categoryType":1,
            "gameType":"Normal"
        },
        {
            "id":8,
            "dividend":1.5,
            "winners":68804,
            "distributed":103206.0,
            "jackpot":0.0,
            "fixed":1.5,
            "categoryType":1,
            "gameType":"Normal"
        }
    ],
    "wagerStatistics":{
        "columns":2849325,
        "wagers":498453,
        "addon":[]
    }
},
{
    "gameId":5104,
    "drawId":2412,
    "drawTime":1646942400000,
    "status":"results",
    "drawBreak":1880000,
    "visualDraw":2412,
    "pricePoints":{
        "amount":0.5
    },
    "winningNumbers":{
        "list":[23,16,17,27,40],
        "bonus":16
    },
    "prizeCategories": [
        {
            "id":1,
            "dividend":0.0,
            "winners":0,
            "distributed":230875.17,
            "jackpot":519124.83,
            "fixed":0.0,
            "categoryType":0,
            "gameType":"Normal",
            "minnumDistributed":0.0
        },
        {
            "id":2,
            "dividend":56795.63,
            "winners":2,
            "distributed":35697.57,
            "jackpot":77893.7,
            "fixed":10.0,
            "categoryType":0,
            "gameType":"Normal"
        },
        {
            "id":3,
            "dividend":2500.0,
            "winners":7,
            "distributed":17500.0,
            "jackpot":0.0,
            "fixed":2500.0,
            "categoryType":1,
            "gameType":"Normal"
        }
    ]
},
{
    "id":4,
    "dividend":50.0,
    "winners":191,
    "distributed":9550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":5,
    "dividend":50.0,
    "winners":571,
    "distributed":28550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":6,
    "dividend":2.0,
    "winners":9782,
    "distributed":19564.0,
    "jackpot":0.0,
    "fixed":2.0,
    "categoryType":1,
    "gameType":"Normal"
}
```

```
Activities Terminal Mai 29 17:17
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
        },
        {
            "id":7,
            "dividend":2.0,
            "winners":112080,
            "distributed":24160.0,
            "jackpot":0.0,
            "fixed":2.0,
            "categoryType":1,
            "gameType":"Normal"
        },
        {
            "id":8,
            "dividend":1.5,
            "winners":68804,
            "distributed":103206.0,
            "jackpot":0.0,
            "fixed":1.5,
            "categoryType":1,
            "gameType":"Normal"
        }
    ],
    "wagerStatistics":{
        "columns":2849325,
        "wagers":498453,
        "addon":[]
    }
},
{
    "gameId":5104,
    "drawId":2412,
    "drawTime":1646942400000,
    "status":"results",
    "drawBreak":1880000,
    "visualDraw":2412,
    "pricePoints":{
        "amount":0.5
    },
    "winningNumbers":{
        "list":[23,16,17,27,40],
        "bonus":16
    },
    "prizeCategories": [
        {
            "id":1,
            "dividend":0.0,
            "winners":0,
            "distributed":230875.17,
            "jackpot":519124.83,
            "fixed":0.0,
            "categoryType":0,
            "gameType":"Normal",
            "minnumDistributed":0.0
        },
        {
            "id":2,
            "dividend":56795.63,
            "winners":2,
            "distributed":35697.57,
            "jackpot":77893.7,
            "fixed":10.0,
            "categoryType":0,
            "gameType":"Normal"
        },
        {
            "id":3,
            "dividend":2500.0,
            "winners":7,
            "distributed":17500.0,
            "jackpot":0.0,
            "fixed":2500.0,
            "categoryType":1,
            "gameType":"Normal"
        }
    ]
},
{
    "id":4,
    "dividend":50.0,
    "winners":191,
    "distributed":9550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":5,
    "dividend":50.0,
    "winners":571,
    "distributed":28550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":6,
    "dividend":2.0,
    "winners":9782,
    "distributed":19564.0,
    "jackpot":0.0,
    "fixed":2.0,
    "categoryType":1,
    "gameType":"Normal"
}
```

```
Activities Terminal Mai 29 17:17
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
        },
        {
            "id":7,
            "dividend":2.0,
            "winners":112080,
            "distributed":24160.0,
            "jackpot":0.0,
            "fixed":2.0,
            "categoryType":1,
            "gameType":"Normal"
        },
        {
            "id":8,
            "dividend":1.5,
            "winners":68804,
            "distributed":103206.0,
            "jackpot":0.0,
            "fixed":1.5,
            "categoryType":1,
            "gameType":"Normal"
        }
    ],
    "wagerStatistics":{
        "columns":2849325,
        "wagers":498453,
        "addon":[]
    }
},
{
    "gameId":5104,
    "drawId":2412,
    "drawTime":1646942400000,
    "status":"results",
    "drawBreak":1880000,
    "visualDraw":2412,
    "pricePoints":{
        "amount":0.5
    },
    "winningNumbers":{
        "list":[23,16,17,27,40],
        "bonus":16
    },
    "prizeCategories": [
        {
            "id":1,
            "dividend":0.0,
            "winners":0,
            "distributed":230875.17,
            "jackpot":519124.83,
            "fixed":0.0,
            "categoryType":0,
            "gameType":"Normal",
            "minnumDistributed":0.0
        },
        {
            "id":2,
            "dividend":56795.63,
            "winners":2,
            "distributed":35697.57,
            "jackpot":77893.7,
            "fixed":10.0,
            "categoryType":0,
            "gameType":"Normal"
        },
        {
            "id":3,
            "dividend":2500.0,
            "winners":7,
            "distributed":17500.0,
            "jackpot":0.0,
            "fixed":2500.0,
            "categoryType":1,
            "gameType":"Normal"
        }
    ]
},
{
    "id":4,
    "dividend":50.0,
    "winners":191,
    "distributed":9550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":5,
    "dividend":50.0,
    "winners":571,
    "distributed":28550.0,
    "jackpot":0.0,
    "fixed":50.0,
    "categoryType":1,
    "gameType":"Normal"
},
{
    "id":6,
    "dividend":2.0,
    "winners":9782,
    "distributed":19564.0,
    "jackpot":0.0,
    "fixed":2.0,
    "categoryType":1,
    "gameType":"Normal"
}
```

```
Activities Terminal Mai 29 17:17
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
[{"id":7, "dividend":2.0, "winners":7047, "distributed":14094.0, "jackpot":0.0, "fixed":2.0, "categoryType":1, "gameType":"Normal"}, {"id":8, "dividend":1.5, "winners":31989, "distributed":47983.5, "jackpot":0.0, "fixed":1.5, "categoryType":1, "gameType":"Normal"}, {"wagerStatistics:{ "columns":1854419, "wagers":338667, "addon":[]}}, {"gameId":5104, "drawId":2411, "drawTime":1646769600000, "status":"results", "drawBreak":1800000, "virtualDraw":2411, "pricePoints:{ "amount":0.5 }, "winningNumbers": { "list":[16,2,3,14,39], "bonus":7 }}, {"prizeCategories": [ {"id":1, "dividend":0.0, "winners":0, "distributed":191738.84, "jackpot":408261.16, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minMuniblistributed":0.0}, {"id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}]}, {"gameId":5104, "drawId":2411, "drawTime":1646769600000, "status":"results", "drawBreak":1800000, "virtualDraw":2411, "pricePoints:{ "amount":0.5 }, "winningNumbers": { "list":[16,2,3,14,39], "bonus":7 }}, {"prizeCategories": [ {"id":1, "dividend":0.0, "winners":0, "distributed":191738.84, "jackpot":408261.16, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minMuniblistributed":0.0}, {"id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}]}], {"gameId":5104, "drawId":2411, "drawTime":1646769600000, "status":"results", "drawBreak":1800000, "virtualDraw":2411, "pricePoints:{ "amount":0.5 }, "winningNumbers": { "list":[16,2,3,14,39], "bonus":7 }}, {"prizeCategories": [ {"id":1, "dividend":0.0, "winners":0, "distributed":191738.84, "jackpot":408261.16, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minMuniblistributed":0.0}, {"id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}]}]
```

```
Activities Terminal Mai 29 17:17
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
[{"gameId":5104, "drawId":2411, "drawTime":1646769600000, "status":"results", "drawBreak":1800000, "virtualDraw":2411, "pricePoints:{ "amount":0.5 }, "winningNumbers": { "list":[16,2,3,14,39], "bonus":7 }}, {"prizeCategories": [ {"id":1, "dividend":0.0, "winners":0, "distributed":191738.84, "jackpot":408261.16, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minMuniblistributed":0.0}, {"id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}]}, {"gameId":5104, "drawId":2411, "drawTime":1646769600000, "status":"results", "drawBreak":1800000, "virtualDraw":2411, "pricePoints:{ "amount":0.5 }, "winningNumbers": { "list":[16,2,3,14,39], "bonus":7 }}, {"prizeCategories": [ {"id":1, "dividend":0.0, "winners":0, "distributed":191738.84, "jackpot":408261.16, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minMuniblistributed":0.0}, {"id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}]}], {"gameId":5104, "drawId":2411, "drawTime":1646769600000, "status":"results", "drawBreak":1800000, "virtualDraw":2411, "pricePoints:{ "amount":0.5 }, "winningNumbers": { "list":[16,2,3,14,39], "bonus":7 }}, {"prizeCategories": [ {"id":1, "dividend":0.0, "winners":0, "distributed":191738.84, "jackpot":408261.16, "fixed":0.0, "categoryType":0, "gameType":"Normal", "minMuniblistributed":0.0}, {"id":2, "dividend":0.0, "winners":0, "distributed":0.0, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}]}]
```

```
Activities Terminal Mai 29 17:18
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
[{"id":2, "dividend":0.0, "winners":0, "distributed":29646.37, "jackpot":0.0, "fixed":0.0, "categoryType":0, "gameType":"Normal"}, {"id":3, "dividend":1.1, "winners":11, "distributed":27500.0, "jackpot":0.0, "fixed":2500.0, "categoryType":1, "gameType":"Normal"}, {"id":4, "dividend":50.0, "winners":202, "distributed":10100.0, "jackpot":0.0, "fixed":50.0, "categoryType":1, "gameType":"Normal"}], {"id":6, "dividend":2.0, "winners":8301, "distributed":16662.0, "jackpot":0.0, "fixed":2.0, "categoryType":1, "gameType":"Normal"}, {"id":7, "dividend":1.5, "winners":40987, "distributed":61480.5, "jackpot":0.0, "fixed":1.5, "categoryType":1, "gameType":"Normal"}], {"id":8, "dividend":1.5, "winners":40987, "distributed":61480.5, "jackpot":0.0, "fixed":1.5, "categoryType":1, "gameType":"Normal"}]
```

```
Activities Terminal Mai 29 17:18
dionusia@dionusia-VirtualBox: ~/Documents/arkes
```

```
[{"id":6, "dividend":2.0, "winners":8301, "distributed":16662.0, "jackpot":0.0, "fixed":2.0, "categoryType":1, "gameType":"Normal"}, {"id":7, "dividend":1.5, "winners":40987, "distributed":61480.5, "jackpot":0.0, "fixed":1.5, "categoryType":1, "gameType":"Normal"}, {"id":8, "dividend":1.5, "winners":40987, "distributed":61480.5, "jackpot":0.0, "fixed":1.5, "categoryType":1, "gameType":"Normal"}]
```

Activities Terminal Mat 29 17:19

```
dionusia@dionusia-VirtualBox: ~/Documents/axies$
```

```
[{"wagerStatistics":{ "columns":1540071, "wagers":283493, "addOn":[] }}, {"totalPages":1, "totalElements":4, "last":true, "numberOfElements":7, "sort": [ { "direction":"DESC", "property":"id.drawId", "ignoreCase":false, "nullHandling":"NATIVE", "descending":true, "ascending":false } ], "first":true, "size":10, "number":0 }]
```

successfully open and read inputFile!

```
dionusia@dionusia-VirtualBox:~/Documents/axies$
```

Screenshot έλλειψη '{' :

Activities Text Editor Mat 29 17:25

```
range_result.json
```

range_result.json

```
1 {  
2     "content": [  
3         {  
4             "gameId":5104,  
5             "drawId":2414,  
6             "drawTime":1647374400000,  
7             "status":"results",  
8             "drawBreak":1800000,  
9             "visualDraw":2414,  
10            "pricePoints":  
11                "amount":0.5  
12            },  
13            "winningNumbers": {  
14                "list":[2,38,23,25,32],  
15                "bonus":9  
16            },  
17            "prizeCategories": [  
18                {  
19                    "id":1,  
20                    "divident":0.0,  
21                    "winners":0,  
22                    "distributed":253146.35,  
23                    "jackpot":1089396.17,  
24                    "fixed":0.0,  
25                    "categoryType":0,  
26                    "gameType":"Normal",  
27                    "minimumDistributed":0.0  
28            ]  
29    ]  
30}
```

Saving file "/home/dionusia/Documents... JSON Tab Width: 8 Ln 10, Col 40 INS

A screenshot of a Linux desktop environment. On the left is a vertical dock with various icons: Activities, Terminal, Home, Applications, Help, Dash, and others. The main window is a terminal window titled "dionusia@dionusia-VirtualBox: ~/Documents/arxes". It shows the command `./run range_result.json` being run. The output is a JSON object with a "content" array containing one item. This item has fields: gameId (5104), drawId (2414), drawTime (1647374400000), status ("results"), drawBreak (1800000), visualDraw (2414), and pricePoints (STOP: Error detected at line: 11). The terminal window has a dark theme.

```
dionusia@dionusia-VirtualBox:~/Documents/arxes$ ./run range_result.json
{
  "content": [
    {
      "gameId": 5104,
      "drawId": 2414,
      "drawTime": 1647374400000,
      "status": "results",
      "drawBreak": 1800000,
      "visualDraw": 2414,
      "pricePoints": STOP: Error detected at line: 11
    }
  ]
}
```

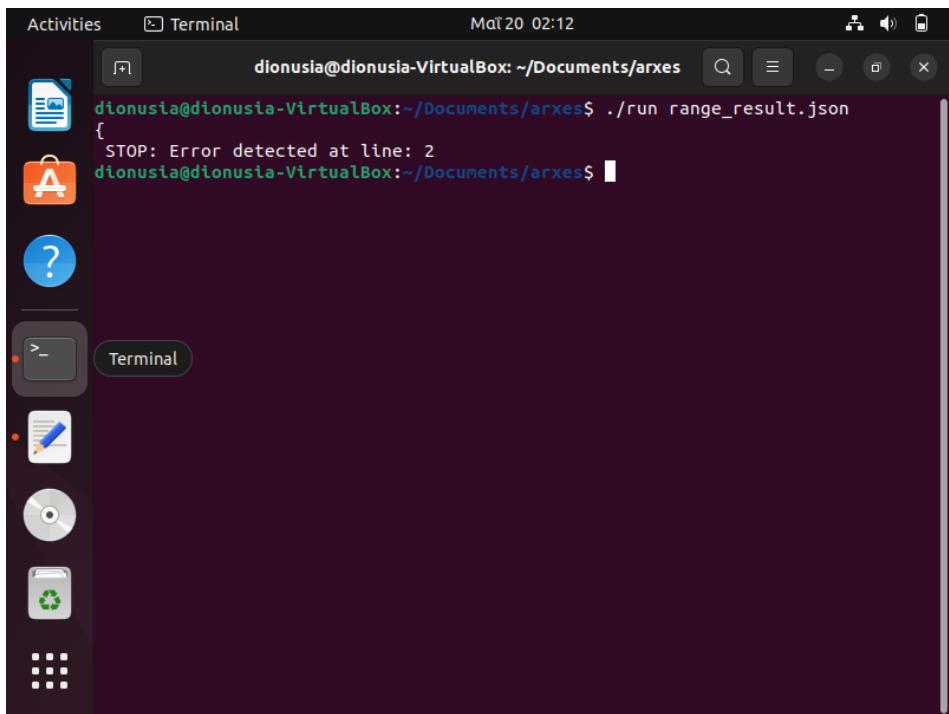
Screenshots αλλαγής εμφάνισης content με totalPages:

A screenshot of a Linux desktop environment. On the left is a vertical dock with various icons: Activities, Text Editor, Home, Applications, Help, Dash, and others. The main window is a text editor titled "range_result.json" located at `~/Documents/arxes`. It has tabs for "parser.l", "parser.y", "range_result.json" (which is the active tab), and "last_result.json". The code in the editor is a JSON object with a "totalPages" field. The "range_result.json" tab shows the following code:

```
1 {
2   "totalPages": [
3     {
4       "gameId": 5104,
5       "drawId": 2414,
6       "drawTime": 1647374400000,
7       "status": "results",
8       "drawBreak": 1800000,
9       "visualDraw": 2414,
10      "pricePoints": {
11        "amount": 0.5
12      },
13      "winningNumbers": {
14        "list": [2, 38, 23, 25, 32],
15        "bonus": [9]
16      },
17      "prizeCategories": [
18        {
19          "id": 1,
20          "divident": 0.0,
21          "winners": 0,
22          "distributed": 253146.35,
23          "jackpot": 1089396.17,
24          "fixed": 0.0,
25          "categoryType": 0,
26          "nameType": "Normal"
27        }
28      ]
29    }
30  ]
31}
```

Activities Terminal Mai 20 02:12

```
dionusia@dionusia-VirtualBox:~/Documents/axies$ ./run range_result.json
{
STOP: Error detected at line: 2
dionusia@dionusia-VirtualBox:~/Documents/axies$
```



3^ο ερώτημα:

a)

Activities Text Editor Mai 22 01:06

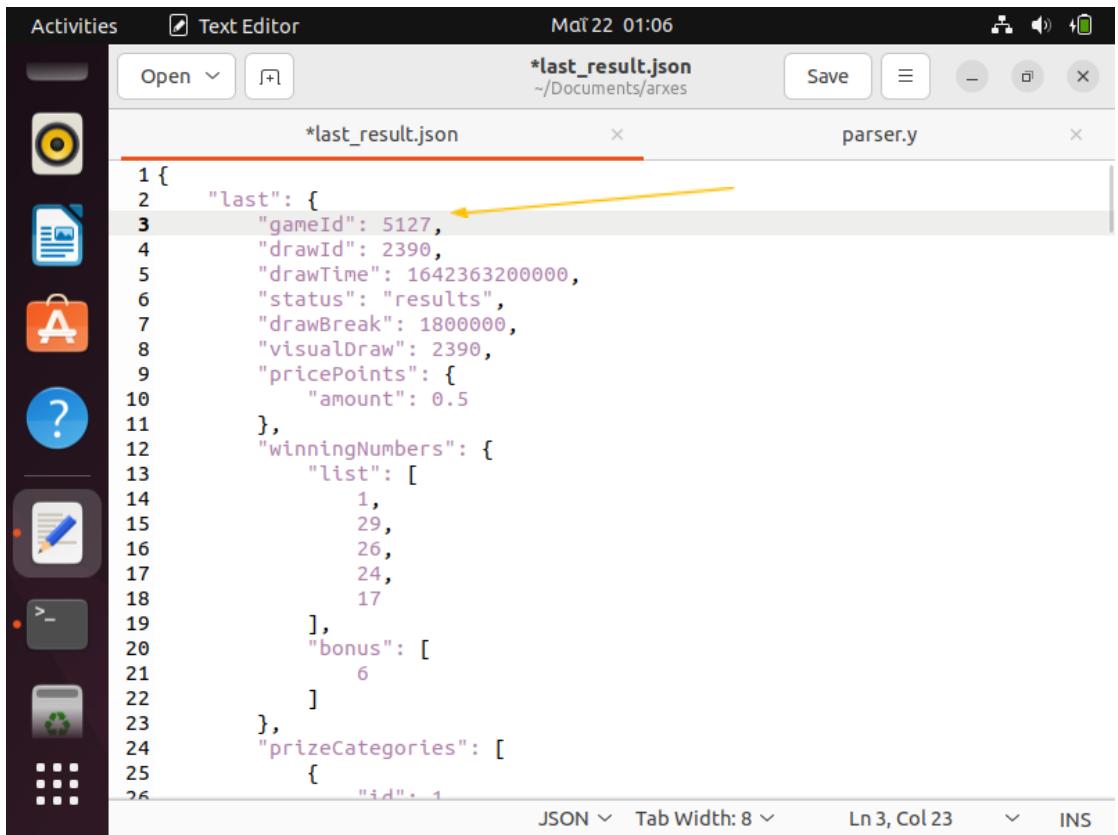
```
*last_result.json
~/Documents/axies
```

Save

	last_result.json	parser.y
1 {		
2 "last": {		
3 "gameId": 5127,		
4 "drawId": 2390,		
5 "drawTime": 1642363200000,		
6 "status": "results",		
7 "drawBreak": 1800000,		
8 "visualDraw": 2390,		
9 "pricePoints": {		
10 "amount": 0.5		
11 },		
12 "winningNumbers": {		
13 "list": [
14 1,		
15 29,		
16 26,		
17 24,		
18 17		
19],		
20 "bonus": [
21 6		
22]		
23 },		
24 "prizeCategories": [
25 {		
26 "id": 1		

parser.y

JSON Tab Width: 8 Ln 3, Col 23 INS



A screenshot of a Linux desktop environment, likely elementary OS, showing a terminal window. The terminal window is titled "Terminal" and has the command "dionusia@dionusia-VirtualBox: ~/Documents/arxes\$./run last_result.json" running. The output of the command is:

```
dionusia@dionusia-VirtualBox:~/Documents/arxes$ ./run last_result.json
{
    "last": {
        "gameId":5127
Error in line 3, wrong gameId
dionusia@dionusia-VirtualBox:~/Documents/arxes$
```

The terminal window is part of a desktop interface with a dark theme. To the left of the terminal is a vertical dock containing icons for various applications: a yellow circle with a black dot, a blue document with a grid, an orange folder with a white letter 'A', a blue circle with a question mark, a white document with a blue pencil, a grey square with a white arrow, and a grey square with a green recycling symbol.

b) μόνο 8 Json objects:

προσθέτουμε ένα ακόμη με id=7 ώστε να έχει 9 objects

Activities Text Editor Mat 23 15:29

Open + last_result.json ~/Documents/axies Save ≡ - □ ×

```
87         "id": 7,
88         "divident": 2.0,
89         "winners": 10341,
90         "distributed": 20682.0,
91         "jackpot": 0.0,
92         "fixed": 2.0,
93         "categoryType": 1,
94         "gameType": "Normal"
95     },
96     {
97         "id": 8,
98         "divident": 1.5,
99         "winners": 49233,
100        "distributed": 73849.5,
101        "jackpot": 0.0,
102        "fixed": 1.5,
103        "categoryType": 1,
104        "gameType": "Normal"
105    },
106    [
107        {
108            "id": 7,
109            "divident": 2.0,
110            "winners": 10341,
111            "distributed": 20682.0,
112            "jackpot": 0.0,
113            "fixed": 2.0,
114            "categoryType": 1,
115            "gameType": "Normal"
116        }
117    ]

```

JSON Tab Width: 8 Ln 115, Col 14 ▼ INS



Activities Terminal Mat 23 15:29

dionusia@dionusia-VirtualBox: ~/Documents/axies

```
        "divident":2.0,
        "winners":16634,
        "distributed":33268.0,
        "jackpot":0.0,
        "fixed":2.0,
        "categoryType":1,
        "gameType":"Normal"
    },
    {
        "id":7,
        "divident":2.0,
        "winners":10341,
        "distributed":20682.0,
        "jackpot":0.0,
        "fixed":2.0,
        "categoryType":1,
        "gameType":"Normal"
    },
    {
        "id":8,
        "divident":1.5,
        "winners":49233,
        "distributed":73849.5,
        "jackpot":0.0,
        "fixed":1.5,
        "categoryType":1,
        "gameType":"Normal"
    }
}
```

} STOP: Error detected at line: 105

dionusia@dionusia-VirtualBox:~/Documents/axies\$

c)

Activities Text Editor Mai 22 01:09

*last_result.json ~/Documents/axies

Save parser.y

*last_result.json

```
8     "drawBreak": 1800000,
9     "visualDraw": 2390,
10    "pricePoints": {
11      "amount": 0.5
12    },
13    "winningNumbers": {
14      "list": [
15        1, ←
16        270,
17        26,
18        24,
19        17
20      ],
21      "bonus": [
22        6
23      ]
24    },
25    "prizeCategories": [
26      {
27        "id": 1,
28        "divident": 0.0,
29        "winners": 0,
30        "distributed": 356871.53,
31        "jackpot": 748954.15,
32        "fixed": 0.0,
        "categoryType": 0,
      }
    ]
  }
```

JSON Tab Width: 8 Ln 15, Col 20 INS

Activities Terminal Mai 22 01:08

dionusia@dionusia-VirtualBox: ~/Documents/axies

```
{ "last": { "gameId":5104, "drawId":2390, "drawTime":1642363200000, "status": "", "drawBreak":1800000, "visualDraw":2390, "pricePoints":{ "amount": }, "winningNumbers": { "list": [ 1, 270 ] } } }
```

Error in line 15, value out of acceptable range

dionusia@dionusia-VirtualBox: ~/Documents/axies\$

Activities Text Editor Ma 22 01:09

*last_result.json ~/Documents/axies

Save parser.y

*last_result.json

parser.y

```
8     "drawBreak": 1800000,
9     "visualDraw": 2390,
10    "pricePoints": {
11      "amount": 0.5
12    },
13    "winningNumbers": {
14      "list": [
15        1,
16        29,
17        26,
18        24,
19        17, ← Yellow arrow points here
20        5
21      ],
22      "bonus": [
23        6
24      ]
25    },
26    "prizeCategories": [
27      {
28        "id": 1,
29        "divident": 0.0,
30        "winners": 0,
31        "distributed": 356871.53,
32        "jackpot": 748954.15,
          "fixed": 0.0,
        }
      ]
    }
  }
```

JSON Tab Width: 8 Ln 19, Col 18 INS

Activities Terminal Ma 22 01:10

dionusia@dionusia-VirtualBox: ~/Documents/axies

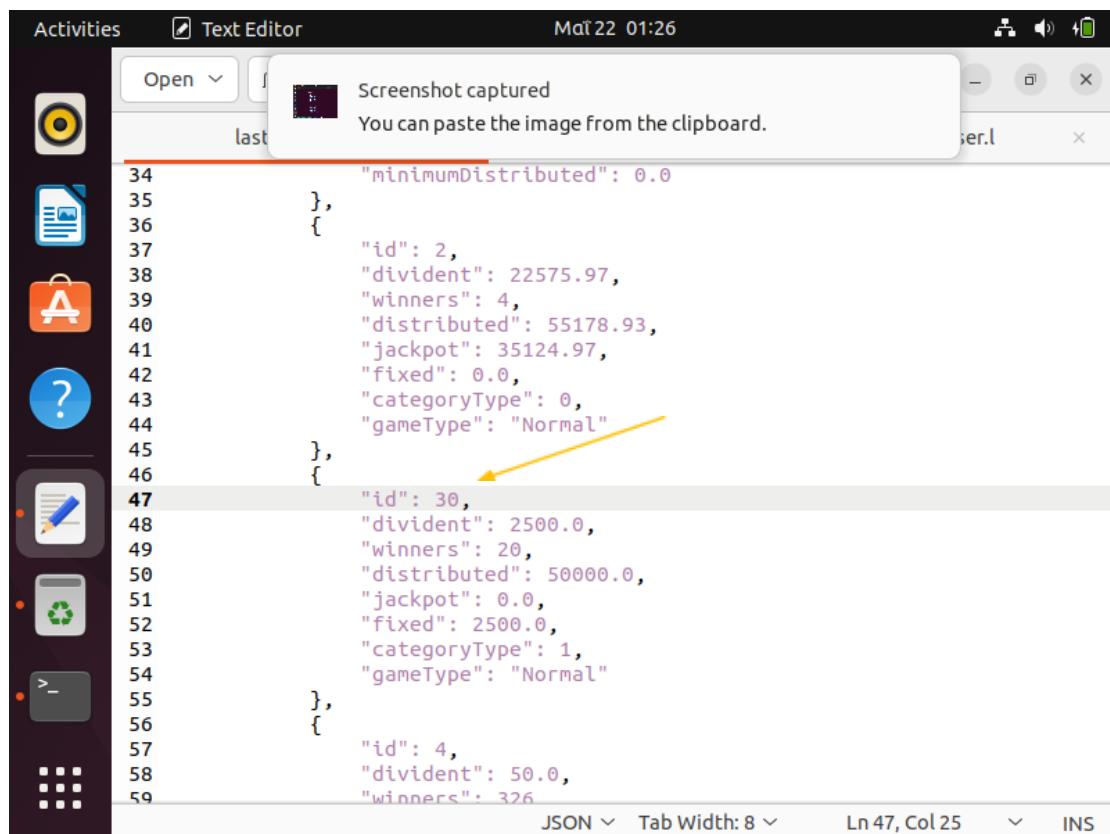
```
dionusia@dionusia-VirtualBox:~/Documents/axies$ ./run last_result.json
{
  "last": {
    "gameId": 5104,
    "drawId": 2390,
    "drawTime": 1642363200000,
    "status": ,
    "drawBreak": 1800000,
    "visualDraw": 2390,
    "pricePoints": {
      "amount": ,
    },
    "winningNumbers": {
      "list": [
        1,
        29,
        26,
        24,
        17
      ]
    }
  }
}
```

STOP: Error detected at line: 18

dionusia@dionusia-VirtualBox:~/Documents/axies\$

Screenshots περιορισμών που ζητούνταν κατά την διάρκεια της υλοποίησης:

1) περιορισμός id να παίρνει τιμές από 1-8:



A screenshot of a terminal window titled "Text Editor". The window shows a JSON file with several objects. An arrow points from the text above to line 47 of the JSON code.

```
Activities Text Editor Mon 22 01:26
Open ▾ Screenshot captured
last You can paste the image from the clipboard.

34     "minimumDistributed": 0.0
35 },
36 {
37     "id": 2,
38     "divident": 22575.97,
39     "winners": 4,
40     "distributed": 55178.93,
41     "jackpot": 35124.97,
42     "fixed": 0.0,
43     "categoryType": 0,
44     "gameType": "Normal"
45 },
46 {
47     "id": 30,
48     "divident": 2500.0,
49     "winners": 20,
50     "distributed": 50000.0,
51     "jackpot": 0.0,
52     "fixed": 2500.0,
53     "categoryType": 1,
54     "gameType": "Normal"
55 },
56 {
57     "id": 4,
58     "divident": 50.0,
59     "winners": 326
```

JSON Tab Width: 8 Ln 47, Col 25 INS

Activities Terminal Mai 22 01:26

```
6
],
},
"prizeCategories": [
{
    "id":1,
    "divident":0.0,
    "winners":0,
    "distributed":356871.53,
    "jackpot":748954.15,
    "fixed":0.0,
    "categoryType":0,
    "gameType":"Normal",
    "minimumDistributed":0.0
},
{
    "id":2,
    "divident":22575.97,
    "winners":4,
    "distributed":55178.93,
    "jackpot":35124.97,
    "fixed":0.0,
    "categoryType":0,
    "gameType":"Normal"
},
{
    "id":30
}
]
}
Error in line 47, ID out of acceptable range
dionusia@dionusia-VirtualBox:~/Documents/arxes$
```

2) περιορισμός categoryType να παίρνει μόνο τιμές 0 ή 1:

Activities Text Editor Mai 22 01:26

```
Open + last_result.json ~/Documents/arxes Save
last_result.json parser.y parser.l
41         "jackpot": 35124.97,
42         "fixed": 0.0,
43         "categoryType": 0,
44         "gameType": "Normal"
45     },
46     {
47         "id": 3,
48         "divident": 2500.0,
49         "winners": 20,
50         "distributed": 50000.0,
51         "jackpot": 0.0,
52         "fixed": 2500.0,
53         "categoryType": 2, ←
54         "gameType": "Normal"
55     },
56     {
57         "id": 4,
58         "divident": 50.0,
59         "winners": 326,
60         "distributed": 16300.0,
61         "jackpot": 0.0,
62         "fixed": 50.0,
63         "categoryType": 1,
64         "gameType": "Normal"
65     },
66 }
```

JSON Tab Width: 8 Ln 52, Col 23 INS

Activities Terminal Mat 22 01:26

Screenshot captured
You can paste the image from the clipboard.

```
        "distributed":356871.53,  
        "jackpot":748954.15,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal",  
        "minimumDistributed":0.0  
    },  
    {  
        "id":2,  
        "divident":22575.97,  
        "winners":4,  
        "distributed":55178.93,  
        "jackpot":35124.97,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal"  
    },  
    {  
        "id":3,  
        "divident":2500.0,  
        "winners":20,  
        "distributed":50000.0,  
        "jackpot":0.0,  
        "fixed":2500.0,  
        "categoryType":2  
    }  
]
```

Error in line 53, wrong categoryType
dionusia@dionusia-VirtualBox:~/Documents/arxes\$

3) μόνο με id=1 να εμφανίζεται το minimumDistributed:

Activities Text Editor Mat 22 02:15

*last_result.json
~/Documents/arxes

parser.y *last_result.json

```
17  
18     ],  
19     "bonus": [  
20         6  
21     ]  
22 },  
23     "prizeCategories": [  
24         {  
25             "id": 4, ←  
26             "divident": 0.0,  
27             "winners": 0,  
28             "distributed": 356871.53,  
29             "jackpot": 748954.15,  
30             "fixed": 0.0,  
31             "categoryType": 0,  
32             "gameType": "Normal",  
33             "minimumDistributed": 0.0  
34         },  
35         {  
36             "id": 2,  
37             "divident": 22575.97,  
38             "winners": 4,  
39             "distributed": 55178.93,  
40             "jackpot": 35124.97,  
41             "fixed": 0.0,  
42         }  
43     ]  
44 }
```

JSON Tab Width: 8 Ln 26, Col 24 INS

```

dionusia@dionusia-VirtualBox:~/Documents/arxes$ ./run last_result.json
{
    "last": {
        "gameId": 5104,
        "drawId": 2390,
        "drawTime": 1642363200000,
        "status": "results",
        "drawBreak": 1800000,
        "visualDraw": 2390,
        "pricePoints": {
            "amount": 0.5
        },
        "winningNumbers": {
            "list": [
                1,
                29,
                26,
                24,
                17
            ],
            "bonus": [
                6
            ]
        },
        "prizeCategories": [
            {
                "id": 4
            }
        ]
    }
}
Error in line 26, only id=1 is accepted
dionusia@dionusia-VirtualBox:~/Documents/arxes$ 
```

Τον περιορισμό κάποια field να μην εμφανίζονται πριν από άλλα το έχουμε δείξει σε screenshot ανεπιτυχής εκτέλεσης
Τον περιορισμό οι ακέραιοι και οι πραγματικοί αριθμοί να είναι θετικοί το καλύψαμε διαβάζοντας ως token το '-' και έπειτα εκτυπώνοντας μήνυμα λάθους:

```

"-"
    {printf("\nError in line %i, only positive value is accepted\n",
lineNum);
    exit(EXIT_FAILURE);}

```

Οι βοηθητικές συναρτήσεις οι οποίες υλοποιήσαμε για να ικανοποιήσουμε τους περιορισμούς όλες είχαν το ίδιο σκεπτικό.
Μέσω μιας if συνθήκης ελεγχόντουσαν οι τιμές που έπαιρνε το αντίστοιχο field.

Έχουμε παραθέσει εκτός των αρχείων last_result,range_result και incorrect files τα οποία είναι τα errors για τις ανεπιτυχές εκτελέσεις

incorrect_last1: έχει το active πριν το last

incorrect_last2: έχει έλλειψη κόμματος

incorrect_range1: έχει το totalPages πριν το content

incorrect_range2: έχει έλλειψη '{'

Είσοδος κώδικα flex bison:

parser.y:

```
%{  
#include <stdio.h>  
#include <stdlib.h>  
#include <string.h>  
extern FILE *yyin;  
extern int yylex();  
extern char* yytext;  
extern int yyparse();  
extern int lineNumber;  
void checkId(char* l);  
void checkGameId(char* b);  
void checkList(char* a);  
void categoryCheck(char* c);  
void checkId1(char* m);  
void yyerror(const char* s);  
}  
  
//Define the tokens that are going to be used:  
%token INT REAL_NUM STRING BOOLEAN  
%token COLON COMMA OBB OBE AB AE  
%token LAST  
%token GAMEID DRAWID DRAWTIME STATUS DRAWBREAK VISUALDRAW PRICEPOINTS AMOUNT  
%token WINNINGNUMBERS LIST BONUS PRIZECATEGORIES  
%token ID DIVIDENT WINNERS DISTRIBUTED JACKPOT FIXED CATEGORYTYPE GAMETYPE  
%token MINIMUMDISTRIBUTED  
%token WAGERSTATISTICS COLUMNS WAGERS ADDON  
%token ACTIVE  
%token CONTENT  
%token TOTALPAGES TOTALELEMENTS LAST2 NUMBEROFELEMENTS SORT DIRECTION
```

```

%token PROPERTY IGNORECASE NULLHANDLING DESCENDING
%token ASCENDING FIRST SIZE NUMBER
%start start

%%

start: jsonfile1|jsonfile2;

jsonfile1: OBB {printf("\n");} last rule active rule1 OBE {printf("\n");}
;

rule: firstapp | rule COMMA{printf("\n");} firstapp;
rule1: second | rule1 COMMA{printf("\n");} second;

firstapp: gameId| drawId | drawTime| status | drawBreak | visualDraw
| pricePoints| winningNumbers | prizeCategories| wagerStatistics
|OBE {printf("\n");}
;

second: gameId| drawId | drawTime| status1 | drawBreak | visualDraw
| pricePoints| winningNumbers | prizeCategories| wagerStatistics1
|OBE {printf("\n");}
;

last: LAST COLON{printf("\t\"last\": ") } OBB {printf("\n");}
active: ACTIVE COLON{printf("\t\"active\": ") } OBB {printf("\n")};

gameId: GAMEID {printf("\t\t\"gameId\"\");} COLON {printf(":");} INT{checkGameId(yytext);}
;

drawId: DRAWID {printf("\t\t\"drawId\"\");} COLON {printf(":");} INT;
;

drawTime:DRAWTIME {printf("\t\t\"drawTime\"\");} COLON {printf(":");} INT ;
;

status: STATUS {printf("\t\t\"status\"\");} COLON {printf(":");} STRING;
;

status1:STATUS {printf("\t\t\"status\"\");} COLON {printf(":");} ACTIVE {printf("\t\t\"active\"\");}
drawBreak: DRAWBREAK{printf("\t\t\"drawBreak\"\");} COLON {printf(":");} INT ;
;

visualDraw: VISUALDRAW{printf("\t\t\"visualDraw\"\");} COLON {printf(":");} INT ;
;
```

```

pricePoints: PRICEPOINTS{printf("\t\t\"pricePoints\"");} COLON {printf(":");} OBB {printf("\n");} priceobj OBE {printf("\n\t\t");}
};

priceobj: AMOUNT {printf("\t\t\"amount\"");} COLON {printf(":");} REAL_NUM;

winningNumbers: WINNINGNUMBERS COLON OBB {printf("\t\t\"winningNumbers\": {\n");} list|bonus OBE {printf("\n\t\t\t");};
list: LIST {printf("\t\t\"list\"");} COLON {printf(":");} array_num;
bonus: BONUS {printf("\t\t\"bonus\"");} COLON {printf(":");} AB {printf("[\n");} {printf("\t\t\t");} INT AE {printf("\n\t\t\t");};;

array_num: AB {printf("[\n");} value AE {printf("\n\t\t\t");};
value:     {printf("\t\t\t");} INT {checkList(yytext);} COMMA {printf(",\n");}
          {printf("\t\t\t");} INT {checkList(yytext);} COMMA {printf(",\n");}
          {printf("\t\t\t");} INT {checkList(yytext);} COMMA {printf(",\n");}
          {printf("\t\t\t");} INT {checkList(yytext);} COMMA {printf(",\n");}

;

prizeCategories: PRIZECATEGORIES COLON AB {printf("\t\t\"prizeCategories\": [\n");} rule2 AE {printf("\n\t\t\t");};

;

rule2: prizeobj COMMA{printf(",\n");}

prizeobj1 COMMA{printf(",\n");}

prizeobj1 COMMA{printf(",\n");}

prizeobj1 COMMA{printf(",\n");}

prizeobj1 COMMA{printf(",\n");}

prizeobj1 COMMA{printf(",\n");}

prizeobj1 COMMA{printf(",\n");}

prizeobj1

;

prizeobj: OBB {printf("\t\t{\n");}

id1 COMMA{printf(",\n");}

divident COMMA{printf(",\n");}

winners COMMA{printf(",\n");}

distributed COMMA{printf(",\n");}

jackpot COMMA{printf(",\n");}

fixed COMMA{printf(",\n");}

categoryType COMMA{printf(",\n");}


```

```

gameType COMMA{printf(",\n");}

minimumDistributed

OBE {printf("\n\t\t");}

;

prizeobj1: OBB {printf("\t\t\n");}

id COMMA{printf(",\n");}

divident COMMA{printf(",\n");}

winners COMMA{printf(",\n");}

distributed COMMA{printf(",\n");}

jackpot COMMA{printf(",\n");}

fixed COMMA{printf(",\n");}

categoryType COMMA{printf(",\n");}

gameType

OBE {printf("\n\t\t");}

;

id1: ID {printf("\t\t\t\"id\"");} COLON {printf(":");} INT {checkId1(yytext);}

id: ID {printf("\t\t\t\"id\"");} COLON {printf(":");} INT {checkId(yytext);}

;

divident: DIVIDENT {printf("\t\t\t\"divident\"");} COLON {printf(":");} REAL_NUM;

winners: WINNERS {printf("\t\t\t\"winners\"");} COLON {printf(":");} INT;

distributed:DISTRIBUTED {printf("\t\t\t\"distributed\"");} COLON {printf(":");} REAL_NUM;

jackpot: JACKPOT {printf("\t\t\t\"jackpot\"");} COLON {printf(":");} REAL_NUM;

fixed: FIXED {printf("\t\t\t\"fixed\"");} COLON {printf(":");} REAL_NUM;

categoryType: CATEGORYTYPE {printf("\t\t\t\"categoryType\"");} COLON {printf(":");} INT{categoryCheck(yytext);}

gameType: GAMETYPE {printf("\t\t\t\"gameType\"");} COLON {printf(":");} STRING;

minimumDistributed: MINIMUMDISTRIBUTED {printf("\t\t\t\"minimumDistributed\"");} COLON {printf(":");} REAL_NUM;

;

wagerStatistics: WAGERSTATISTICS{printf("\t\t\t\"wagerStatistics\"");} COLON {printf(":");} OBB {printf("\n");} wagerobj OBE OBE

COMMA {printf("\n\t\t\t\n\t\t\t\n\t\t\t");};

wagerStatistics1: WAGERSTATISTICS{printf("\t\t\t\"wagerStatistics\"");} COLON {printf(":");} OBB {printf("\n");} wagerobj OBE

OBE {printf("\n\t\t\t\n\t\t\t\n\t\t\t");};

;

wagerobj: COLUMNS {printf("\t\t\t\"columns\"");} COLON {printf(":");} INT COMMA{printf(",\n");}

WAGERS {printf("\t\t\t\"wagers\"");} COLON {printf(":");} INT COMMA{printf(",\n");}

ADDON {printf("\t\t\t\"addOn\"");} COLON {printf(":");} AB AE {printf("[]");}

;

jsonfile2: OBB {printf("\n");} content totalPages totalElements last2 numberOfWorks sort first size number

```

```

OBE {printf("\n}\n");}
;

content: CONTENT COLON{printf("\\"content\\": ")} AB {printf("[\\n");} rule5 rule5 rule5 rule5 rule5 rule6 AE COMMA
{printf("\\n\\t],\\n");};

rule5: one| rule5 COMMA{printf(",\\n");} one;
rule6: two| rule6 COMMA{printf(",\\n");} two;
one: OBB {printf("\t{\\n");} | gameId| drawId | drawTime| status | drawBreak | visualDraw
| pricePoints| winningNumbers1 | prizeCategories| wagerStatistics
|OBE {printf("}\n");}

;

two: OBB {printf("\t{\\n");} | gameId| drawId | drawTime| status | drawBreak | visualDraw
| pricePoints| winningNumbers1 | prizeCategories| wagerStatistics1
|OBE {printf("}\n");}

;

winningNumbers1: WINNINGNUMBERS COLON OBB {printf("\t\\t\\"winningNumbers\\": {\\n");} list1|bonus1 OBE {printf("\\n\\t\\t\\n");};

list1: LIST {printf("\t\\t\\t\\"list\\\"");} COLON {printf(":");} AB {printf("[");} value1 AE {printf("]");};

bonus1: BONUS {printf("\t\\t\\t\\"bonus\\\"");} COLON {printf(":");} AB {printf("[");} INT AE {printf("]");};

value1: INT {checkList(yytext);} COMMA {printf(",");}

INT {checkList(yytext);} COMMA {printf(",");}

INT {checkList(yytext);} COMMA {printf(",");}

INT {checkList(yytext);} COMMA {printf(",");}

INT {checkList(yytext);}

;

totalPages: TOTALPAGES {printf("\t\\"totalPages\\\"");} COLON {printf(":");} INT COMMA{printf(",\\n");};

totalElements: TOTALELEMENTS {printf("\t\\"totalElements\\\"");} COLON {printf(":");} INT COMMA{printf(",\\n");};

last2: LAST {printf("\t\\"last\\\"");} COLON {printf(":");} BOOLEAN COMMA{printf(",\\n");};

numberOfElements: NUMEROFELEMENTS {printf("\t\\"numberOfElements\\\"");} COLON {printf(":");} INT
COMMA{printf(",\\n");};

sort: SORT {printf("\t\\"sort\\\"");} COLON {printf(":");} AB{printf("[\\n");} sortobj AE COMMA {printf("\t\\t],\\n");};  ;

sortobj: OBB {printf("\t\\t{\\n");}

direction COMMA{printf(",\\n");}

property COMMA{printf(",\\n");}

ignoreCase COMMA{printf(",\\n");}

nullHandling COMMA{printf(",\\n");}

descending COMMA{printf(",\\n");}
```

```

    ascending
    OBE {printf("\n\t\t}\n");}
;

direction: DIRECTION {printf("\t\t\"direction\"");} COLON {printf(":");} STRING;
property: PROPERTY {printf("\t\t\"property\"");} COLON {printf(":");} STRING;
ignoreCase: IGNORECASE {printf("\t\t\"ignoreCase\"");} COLON {printf(":");} BOOLEAN;
nullHandling: NULLHANDLING {printf("\t\t\"nullHandling\"");} COLON {printf(":");} STRING;
descending: DESCENDING {printf("\t\t\"descending\"");} COLON {printf(":");} BOOLEAN;
ascending: ASCENDING {printf("\t\t\"ascending\"");} COLON {printf(":");} BOOLEAN;

```

```

first: FIRST {printf("\t\"first\"");} COLON {printf(":");} BOOLEAN COMMA{printf(",\n");}
size: SIZE {printf("\t\"size\"");} COLON {printf(":");} INT COMMA{printf(",\n");}
number: NUMBER {printf("\t\"number\"");} COLON {printf(":");} INT;

```

```

%%

void checkList(char* a)
{
    if(atoi(a)<1 | atoi(a)>45)
    {
        printf("\nError in line %i, value out of acceptable range\n", lineNumber);
        exit(EXIT_FAILURE);
    }
}
```

```

void checkGameId(char* b)
{
    if(atoi(b)== 1100 || atoi(b)==1110|| atoi(b)==2100|| atoi(b)==2101|| 
    atoi(b)==5103|| atoi(b)==5104|| atoi(b)==5106)
    {
        /*do nothing*/
    }
    else{
        printf("\nError in line %i, wrong gameId\n", lineNumber);
        exit(EXIT_FAILURE);
    }
}
```

```

void checkId(char* l)
{
    if(atoi(l)<1 | atoi(l)>8)
    {
        printf("\nError in line %i, ID out of acceptable range\n", lineNumber);
        exit(EXIT_FAILURE);
    }
}

void checkId1(char* m)
{
    if(atoi(m)!=1)
    {
        printf("\nError in line %i, only id=1 is accepted\n", lineNumber);
        exit(EXIT_FAILURE);
    }
}

void categoryCheck(char* c)
{
    if(atoi(c)== 0| | atoi(c)==1)
    {
        /*do nothing*/
    }
    else{
        printf("\nError in line %i, wrong categoryType\n", lineNumber);
        exit(EXIT_FAILURE);
    }
}

void yyerror(const char *s)
{
    printf(" STOP: Error detected at line: %d\n",lineNumber);
    exit(1);
}

```

```

int main(int argc, char* argv[]) {
    FILE *f;

    f = fopen(argv[1], "r");
    yyin = f;
    yyparse();
    printf("successfully open and read inputFile!\n");
    return 0;
}

}

```

parser.l:

```

%{
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include "parser.tab.h"

int lineNumber=1;

%}

%option noyywrap

int          [1-9][0-9]*|0
boolean      ("true"|"false")
string       (\.|[^\.])*
realnum    ([0-9]+\.?[0-9]+)
ws          [ \t\n\r]
%%

:
{return COLON;}
,
{return COMMA;}
\{
{return OBB;}
\}
{return OBE;}
\[ 
{return AB;}
\]
{return AE;}

"_" {printf("\nError in line %i, only positive value is accepted\n", lineNumber);
exit(EXIT_FAILURE);}


```

```

\"last\"          { return LAST; }

\"active\"        { return ACTIVE; }

\"gameId\"         { return GAMEID; }

\"drawId\"         { return DRAWID; }

\"drawTime\"       { return DRAWTIME; }

\"status\"         { return STATUS; }

\"drawBreak\"      { return DRAWBREAK; }

\"visualDraw\"     { return VISUALDRAW; }

\"pricePoints\"    { return PRICEPOINTS; }

\"amount\"         { return AMOUNT; }

\"winningNumbers\" { return WINNINGNUMBERS; }

\"list\"           { return LIST; }

\"bonus\"          { return BONUS; }

\"prizeCategories\" {return PRIZECATEGORIES; }

\"id\"              {return ID; }

\"divident\"        { return DIVIDENT; }

\"winners\"         { return WINNERS; }

\"distributed\"     { return DISTRIBUTED; }

\"jackpot\"         { return JACKPOT; }

\"fixed\"           { return FIXED; }

\"categoryType\"    { return CATEGORTYPE; }

\"gameType\"         { return GAMETYPE; }

\"minimumDistributed\" { return MINIMUMDISTRIBUTED; }

\"wagerStatistics\" { return WAGERSTATISTICS; }

\"columns\"         { return COLUMNS; }

\"wagers\"          { return WAGERS; }

\"addOn\"           { return ADDON; }

\"content\"          {return CONTENT; }

\"totalPages\"       {return TOTALPAGES; }

```

```
\"totalElements\" {return TOTALELEMENTS;}

\"numberOfElements\" {return NUMBEROFELEMENTS;}

\"sort\" {return SORT;}

\"direction\" {return DIRECTION;}

\"property\" {return PROPERTY;}

\"ignoreCase\" {return IGNORECASE;}

\"nullHandling\" {return NULLHANDLING;}

\"descending\" {return DESCENDING;}

\"ascending\" {return ASCENDING;}

\"first\" {return FIRST;}

\"size\" {return SIZE;}

\"number\" {return NUMBER;}

{boolean} {printf("\%s",yytext);return BOOLEAN;}

\"{string}\\" {printf("\%s",yytext);return STRING;}

{int} {printf("\%s",yytext);return INT;}

{realnum} {printf("\%s",yytext);return REAL_NUM;}

\n {++lineNum;}

{ws} {}
```

Τα δοκιμαστικά αρχεία εισόδου ήταν:

last_result.json:

```
{  
  "last": {  
    "gamelid": 5104,  
    "drawId": 2390,  
    "drawTime": 1642363200000,  
    "status": "results",  
    "drawBreak": 1800000,  
    "visualDraw": 2390,  
    "pricePoints": {  
      "id": 1000000000000000000,  
      "value": 1000000000000000000,  
      "order": 1  
    },  
    "order": 1  
  }  
}
```

```
        "amount": 0.5
    },
    "winningNumbers": {
        "list": [
            1,
            29,
            26,
            24,
            17
        ],
        "bonus": [
            6
        ]
    },
    "prizeCategories": [
        {
            "id": 1,
            "divident": 0.0,
            "winners": 0,
            "distributed": 356871.53,
            "jackpot": 748954.15,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal",
            "minimumDistributed": 0.0
        },
        {
            "id": 2,
            "divident": 22575.97,
            "winners": 4,
            "distributed": 55178.93,
            "jackpot": 35124.97,
            "fixed": 0.0,
            "categoryType": 0,
            "gameType": "Normal"
        },
        {
            "id": 3,
```

```
        "divident": 2500.0,  
        "winners": 20,  
        "distributed": 50000.0,  
        "jackpot": 0.0,  
        "fixed": 2500.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 4,  
        "divident": 50.0,  
        "winners": 326,  
        "distributed": 16300.0,  
        "jackpot": 0.0,  
        "fixed": 50.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 5,  
        "divident": 50.0,  
        "winners": 816,  
        "distributed": 40800.0,  
        "jackpot": 0.0,  
        "fixed": 50.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 6,  
        "divident": 2.0,  
        "winners": 16634,  
        "distributed": 33268.0,  
        "jackpot": 0.0,  
        "fixed": 2.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },
```



```
{  
    "id": 1,  
    "divident": 0.0,  
    "winners": 0,  
    "distributed": 0.0,  
    "jackpot": 1105825.68,  
    "fixed": 0.0,  
    "categoryType": 0,  
    "gameType": "Normal",  
    "minimumDistributed": 1300000.0  
},  
{  
    "id": 2,  
    "divident": 0.0,  
    "winners": 0,  
    "distributed": 0.0,  
    "jackpot": 0.0,  
    "fixed": 0.0,  
    "categoryType": 0,  
    "gameType": "Normal"  
},  
{  
    "id": 3,  
    "divident": 0.0,  
    "winners": 0,  
    "distributed": 0.0,  
    "jackpot": 0.0,  
    "fixed": 2500.0,  
    "categoryType": 1,  
    "gameType": "Normal"  
},  
{  
    "id": 4,  
    "divident": 0.0,  
    "winners": 0,  
    "distributed": 0.0,  
    "jackpot": 0.0,  
    "fixed": 50.0,
```

```
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 5,  
        "divident": 0.0,  
        "winners": 0,  
        "distributed": 0.0,  
        "jackpot": 0.0,  
        "fixed": 50.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 6,  
        "divident": 0.0,  
        "winners": 0,  
        "distributed": 0.0,  
        "jackpot": 0.0,  
        "fixed": 2.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 7,  
        "divident": 0.0,  
        "winners": 0,  
        "distributed": 0.0,  
        "jackpot": 0.0,  
        "fixed": 2.0,  
        "categoryType": 1,  
        "gameType": "Normal"  
    },  
    {  
        "id": 8,  
        "divident": 0.0,  
        "winners": 0,  
        "distributed": 0.0,
```

```

        "jackpot": 0.0,
        "fixed": 1.5,
        "categoryType": 1,
        "gameType": "Normal"
    }
],
"wagerStatistics": {
    "columns": 0,
    "wagers": 0,
    "addOn": []
}
}
}
}

```

range_result.json:

```

{
    "content": [
        {
            "gameId":5104,
            "drawId":2414,
            "drawTime":1647374400000,
            "status":"results",
            "drawBreak":1800000,
            "visualDraw":2414,
            "pricePoints": {
                "amount":0.5
            },
            "winningNumbers": {
                "list": [2,38,23,25,32],
                "bonus": [9]
            },
            "prizeCategories": [
                {
                    "id":1,
                    "divident":0.0,

```

```
        "winners":0,  
        "distributed":253146.35,  
        "jackpot":1089396.17,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal",  
        "minimumDistributed":0.0  
    },  
    {  
        "id":2,  
        "divident":93990.61,  
        "winners":1,  
        "distributed":39141.1,  
        "jackpot":54849.51,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal"  
    },  
    {  
        "id":3,  
        "divident":2500.0,  
        "winners":16,  
        "distributed":40000.0,  
        "jackpot":0.0,  
        "fixed":2500.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":4,  
        "divident":50.0,  
        "winners":265,  
        "distributed":13250.0,  
        "jackpot":0.0,"fixed":50.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {
```

```
        "id":5,  
        "divident":50.0,  
        "winners":803,  
        "distributed":40150.0,  
        "jackpot":0.0,  
        "fixed":50.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":6,  
        "divident":2.0,  
        "winners":11148,  
        "distributed":22296.0,  
        "jackpot":0.0,  
        "fixed":2.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":7,  
        "divident":2.0,  
        "winners":9917,  
        "distributed":19834.0,  
        "jackpot":0.0,  
        "fixed":2.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":8,  
        "divident":1.5,  
        "winners":46429,  
        "distributed":69643.5,  
        "jackpot":0.0,  
        "fixed":1.5,  
        "categoryType":1,  
        "gameType":"Normal"
```

```
        },
        ],
        "wagerStatistics":{
            "columns":2033304,
            "wagers":359687,
            "addOn":[]
        }
    },
    {
        "gameId":5104,
        "drawId":2413,
        "drawTime":1647201600000,
        "status":"results",
        "drawBreak":1800000,
        "visualDraw":2413,
        "pricePoints":{
            "amount":0.5
        },
        "winningNumbers": {
            "list":[36,44,16,31,38],
            "bonus": [8]
        },
        "prizeCategories": [
            {
                "id":1,
                "divident":0.0,
                "winners":0,
                "distributed":354740.96,
                "jackpot":734655.21,
                "fixed":0.0,
                "categoryType":0,
                "gameType":"Normal",
                "minimumDistributed":0.0
            },
            {
                "id":2,
                "divident":0.0,
                "winners":0,
            }
        ]
    }
}
```

```
        "distributed":54849.51,  
        "jackpot":0.0,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal"  
    },  
    {  
        "id":3,  
        "divident":2500.0,  
        "winners":17,  
        "distributed":42500.0,  
        "jackpot":0.0,  
        "fixed":2500.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":4,  
        "divident":50.0,  
        "winners":271,  
        "distributed":13550.0,  
        "jackpot":0.0,  
        "fixed":50.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":5,  
        "divident":50.0,  
        "winners":796,  
        "distributed":39800.0,  
        "jackpot":0.0,  
        "fixed":50.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":6,
```

```
        "divident":2.0,  
        "winners":11150,  
        "distributed":22300.0,  
        "jackpot":0.0,  
        "fixed":2.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":7,  
        "divident":2.0,  
        "winners":12080,  
        "distributed":24160.0,  
        "jackpot":0.0,  
        "fixed":2.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":8,  
        "divident":1.5,  
        "winners":68804,  
        "distributed":103206.0,  
        "jackpot":0.0,  
        "fixed":1.5,  
        "categoryType":1,  
        "gameType":"Normal"  
    }  
],  
"wagerStatistics":{  
    "columns":2849325,  
    "wagers":498453,  
    "addOn":[]  
}  
},  
{  
    "gameId":5104,  
    "drawId":2412,
```

```
"drawTime":1646942400000,  
"status":"results",  
"drawBreak":1800000,  
"visualDraw":2412,  
"pricePoints":{"amount":0.5},  
"winningNumbers":{  
    "list":[23,16,17,27,40],  
    "bonus":[16]  
},  
"prizeCategories": [  
    {  
        "id":1,  
        "divident":0.0,  
        "winners":0,  
        "distributed":230875.17,  
        "jackpot":519124.83,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal",  
        "minimumDistributed":0.0  
    },  
    {  
        "id":2,  
        "divident":56795.63,  
        "winners":2,  
        "distributed":35697.57,  
        "jackpot":77893.7,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal"  
    },  
    {  
        "id":3,  
        "divident":2500.0,  
        "winners":7,  
        "distributed":17500.0,  
        "jackpot":0.0,  
        "fixed":2500.0,  
    }]
```

```
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":4,  
        "divident":50.0,  
        "winners":191,  
        "distributed":9550.0,  
        "jackpot":0.0,  
        "fixed":50.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":5,  
        "divident":50.0,  
        "winners":571,  
        "distributed":28550.0,  
        "jackpot":0.0,  
        "fixed":50.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":6,  
        "divident":2.0,  
        "winners":9782,  
        "distributed":19564.0,  
        "jackpot":0.0,  
        "fixed":2.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":7,  
        "divident":2.0,  
        "winners":7047,  
        "distributed":14094.0,
```

```
        "jackpot":0.0,  
        "fixed":2.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":8,  
        "divident":1.5,  
        "winners":31989,  
        "distributed":47983.5,  
        "jackpot":0.0,  
        "fixed":1.5,  
        "categoryType":1,  
        "gameType":"Normal"  
    }  
],  
"wagerStatistics":{  
    "columns":1854419,  
    "wagers":338607,  
    "addOn":[]  
}  
},  
{  
    "gameId":5104,  
    "drawId":2411,  
    "drawTime":1646769600000,  
    "status":"results",  
    "drawBreak":1800000,  
    "visualDraw":2411,  
    "pricePoints":{  
        "amount":0.5  
    },  
    "winningNumbers":{  
        "list":[16,2,3,14,39],  
        "bonus":[7]  
    },  
    "prizeCategories": [  
        {
```

```
        "id":1,  
        "divident":0.0,  
        "winners":0,  
        "distributed":191738.84,  
        "jackpot":408261.16,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal",  
        "minimumDistributed":0.0  
    },  
    {  
        "id":2,  
        "divident":0.0,  
        "winners":0,  
        "distributed":29646.37,  
        "jackpot":48247.33,  
        "fixed":0.0,  
        "categoryType":0,  
        "gameType":"Normal"  
    },  
    {  
        "id":3,  
        "divident":2500.0,  
        "winners":11,  
        "distributed":27500.0,  
        "jackpot":0.0,  
        "fixed":2500.0,  
        "categoryType":1,  
        "gameType":"Normal"  
    },  
    {  
        "id":4,  
        "divident":50.0,  
        "winners":202,  
        "distributed":10100.0,  
        "jackpot":0.0,  
        "fixed":50.0,  
        "categoryType":1,  
    }
```

"gameType":"Normal"

},

{

"id":5,

"divident":50.0,

"winners":572,

"distributed":28600.0,

"jackpot":0.0,

"fixed":50.0,

"categoryType":1,

"gameType":"Normal"

},

{

"id":6,

"divident":2.0,

"winners":8301,

"distributed":16602.0,

"jackpot":0.0,"fixed":2.0,

"categoryType":1,

"gameType":"Normal"

},

{

"id":7,

"divident":2.0,

"winners":8441,

"distributed":16882.0,

"jackpot":0.0,

"fixed":2.0,

"categoryType":1,

"gameType":"Normal"

},

{

"id":8,

"divident":1.5,

"winners":40987,

"distributed":61480.5,

"jackpot":0.0,

"fixed":1.5,

```
        "categoryType":1,  
        "gameType":"Normal"  
    }  
],  
"wagerStatistics":{  
    "columns":1540071,  
    "wagers":283493,  
    "addOn":[]  
}  
}  
},  
"totalPages":1,  
"totalElements":4,  
"last":true,  
"numberOfElements":7,  
"sort": [  
    {  
        "direction":"DESC",  
        "property":"id.drawId",  
        "ignoreCase":false,  
        "nullHandling":"NATIVE",  
        "descending":true,  
        "ascending":false  
    }  
],  
"first":true,  
"size":10,  
"number":0  
}
```