

# 編譯器期末專案報告

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主題: Parse json的檔案將資料的key、value和型態輸出

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組員及分工: 資工3A 01057020 林佑丞(100%)

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## Run

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1. 請先安裝flex、bison和wxDevC++
2. 輸入指令(cmd)

```
1 flex token.l
2 bison -d grammer.y
3 gcc grammer.tab.c lex.yy.c -lfl
4 a.exe < [jsonfile]
```

3. 若使用powershell，將a.exe < [jsonfile]改成:

```
1 get-Content [jsonfile] | ./a.exe
```

([jsonfile]請自行改成json檔案的路徑)

## IO

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### Input1:

```
{
  "squadName": "Super hero squad",
  "homeTown": "Metro City",
  "formed": 2016,
  "secretBase": "Super tower",
  "active": true,
  "members": [
    {
      "name": "Molecule Man",
      "age": 29,
      "secretIdentity": "Dan Jukes",
      "powers": ["Radiation resistance", "Turning tiny", "Radiation blast"]
    },
    {
      "name": "Madame Uppercut",
      "age": 39,
      "secretIdentity": "Jane Wilson",
      "powers": [
        "Million tonne punch",
```

```

        "Damage resistance",
        "Superhuman reflexes"
    ]
},
{
    "name": "Eternal Flame",
    "age": 1000000,
    "powers": [
        "Immortality",
        "Heat Immunity",
        "Inferno",
        "Teleportation",
        "Interdimensional travel"
    ]
}
],
"project memeber": {
    "member1": "John",
    "member2": "Anna",
    "member3": "Peter",
    "salary": [2500, 5000, 7000]
},
"Company": null
}

```

## Output1:

```

"squadName": string "Super hero squad"
"homeTown": string "Metro City"
"formed": number 2016
"secretBase": string "Super tower"
"active": boolean true
"name": string "Molecule Man"
"age": number 29
"secretIdentity": string "Dan Jukes"
"powers": string "Radiation resistance" string "Turning tiny" string "Radiation blast" array size: 3
"name": string "Madame Uppercut"
"age": number 39
"secretIdentity": string "Jane Wilson"
"powers": string "Million tonne punch" string "Damage resistance" string "Superhuman reflexes" array size: 3
"name": string "Eternal Flame"
"age": number 1000000
"powers": string "Immortality" string "Heat Immunity" string "Inferno" string "Teleportation" string "Interdimensional travel" array size: 5
"members": object size: 4 object size: 4 object size: 3 array size: 3
"member1": string "John"
"member2": string "Anna"
"member3": string "Peter"
"salary": number 2500 number 5000 number 7000 array size: 3
"project memeber": object size: 4
"Company": null

```

## 輸出說明:

(請參照上方的輸入輸出)

json的資料分為數字、字串、布林、陣列、物件及null

如果是字串、數字、布林及null

輸出為: "key": type value

ex:

```

"squadName": string "Super hero squad"
"formed": number 2016
"active": boolean true
"Company": null

```

如果是陣列

則會將陣列的內容輸出再輸出類型及大小

ex:

```
"powers": string "Million tonne punch" string "Damage resistance"  
string "Superhuman reflexes" array size: 3
```

若為物件:

則會先輸出內容物，再輸出key和類型及大小

ex:

```
"member1": string "John"  
"member2": string "Anna"  
"member3": string "Peter"  
"salary": number 2500 number 5000 number 7000 array size: 3  
"project memeber": object size: 4
```

陣列內為物件則為下圖

```
6  "name": string "Molecule Man"  
7  "age": number 29  
8  "secretIdentity": string "Dan Jukes"  
9  "powers": string "Radiation resistance" string "Turning tiny" string "Radiation blast" array size: 3  
10 "name": string "Madame Uppercut"  
11 "age": number 39  
12 "secretIdentity": string "Jane Wilson"  
13 "powers": string "Million tonne punch" string "Damage resistance" string "Superhuman reflexes" array size: 3  
14 "name": string "Eternal Flame"  
15 "age": number 1000000  
16 "powers": string "Immortality" string "Heat Immunity" string "Inferno" string "Teleportation" string "Interdimensional travel" array size: 5  
17 "members": object size: 4 object size: 4 object size: 3 array size: 3
```

顏色為對應的物件內容

members是有三個物件類型的陣列

## 發生錯誤

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只要讀入的json檔案不是合法的，就會顯示錯誤訊息並終止輸出

ex:

input:

```
{  
  "squadName": "Super hero squad  
}
```

output:

```
error: syntax error
```

input的內容最後少了一個"，所以他是不合法的json檔案，故發生syntax error