

FHE Compiler JSON Format

JSON Format (Graph 표현)

- nodes array
 - nodes
 - depth: node의 깊이
 - value: plain node의 경우에 값
 - label: 중요하지 않음. 개발시 참고용
 - params: PlainNode, CipherNode인 경우
 - scale
 - min_scale
 - level
 - type: 노드의 타입, 연산 종류
 - ex) PlainNode / CipherNode / FreeNode / Addition / Multiplication / Negation
 - root: root 여부
 - id: node 구분
- links array
 - links: source → target의 edge
 - source
 - target

Example

Python Source Code

```
import compyler as cp

def test_cppcompile():
```

```

plan = cp.CKKSplan()

a = plan.add("a", 30)
b = -a + 2
plan.cppcompile(b)

```

JSON

```

{
  "directed": false,
  "multigraph": false,
  "graph": {},
  "nodes": [
    {
      "depth": 2,
      "value": null,
      "label": "(negate(a) + 2)",
      "type": "<class 'compyler.cipher_node.FreeNode'>",
      "root": true,
      "id": 1
    },
    {
      "isexecuted": false,
      "result": null,
      "depth": 0,
      "label": "+",
      "root": false,
      "type": "<class 'compyler.operations.Addition'>",
      "id": 2
    },
    {
      "depth": 1,
      "value": null,
      "label": "negate(a)",
      "root": false,
      "type": "<class 'compyler.cipher_node.FreeNode'>",
      "id": 3
    },
    {
      "depth": 0,
      "value": 2,
      "label": "2",
      "params": {
        "scale": null,
        "min_scale": null,
        "level": null
      },
      "root": false,
      "type": "<class 'compyler.cipher_node.PlainNode'>",
      "id": 4
    },
    {
      "depth": 0,
      "label": "negate",

```

```

    "root": false,
    "type": "<class 'compyler.operations.Negation'>",
    "id": 5
  },
  {
    "depth": 0,
    "value": null,
    "label": "a",
    "params": {
      "scale": 30,
      "min_scale": 30,
      "level": 1000
    },
    "root": false,
    "type": "<class 'compyler.cipher_node.CipherNode'>",
    "id": 6
  }
],
"links": [
  {
    "source": 1,
    "target": 2
  },
  {
    "source": 2,
    "target": 3
  },
  {
    "source": 2,
    "target": 4
  },
  {
    "source": 3,
    "target": 5
  },
  {
    "source": 5,
    "target": 6
  }
]
}

```