

CNTK Layers vs. CNTK Graph API

CNTK Layers

```
z = f(x,y)
```

```
z = f(lbl=y, qry=x)
```

```
z = f([[2, 3]], [[4, 5]])
```

```
s = v[...,13:42,:]
```

```
E = model.embed.E
```

```
@Function
```

```
def f(x, y):  
    return (expr1(x,y), expr2(x,y))
```

```
@BlockFunction('f', name)
```

```
def f(x, y):  
    return expr(x, y)
```

```
@Function
```

```
def f(x: Sequence[Tensor[(13,42)]])  
    return expr(x)
```

CNTK Graph API

```
z = f.clone(CloneMethod.share, {f.arguments[0]: x, f.arguments[1]: y})
```

```
params_dict = { arg.name: arg for arg in f.arguments }  
z = f.eval({params_dict['lbl']: y, params_dict['qry']: x})
```

```
z = f.eval({f.arguments[0]: [[2, 3]], f.arguments[1]: [[4, 5]]})
```

```
s = slice(v, begin_index=13, end_index=42, axis=-2)
```

```
E = find_by_name(find_by_name(model, 'embed').block_root, 'E')
```

```
x, y = ordered(placeholder_variable('x'),  
               placeholder_variable('y'))  
f = combine([expr1(x,y), expr2(x,y)])
```

```
x, y = (placeholder_variable('x'), placeholder_variable('y'))  
x1, y1 = [placeholder_variable(arg.name) for arg in (x,y)]  
f = expr(x1, y1)  
f = as_block(f, {x1: x, y1: y}, 'f', name)
```

```
x = input_variable((13,42),  
                   dynamic_axes=Axis.default_input_variable_dynamic_axes())  
f = expr(x)
```