

# UPGMA & WPGMA Unit Tests

Hint: Many test values are taken from project Algorithms  
for Bioninformatics of Alexander Mattheis or the lectures.

## Test 1

Input

	a	b	c	d	e
a	0	6	10	10	10
b		0	10	10	10
c			0	2	6
d				0	6
e					0

Output

```
((a:3.0,b:3.0):2.0,(e:3.0,(c:1.0,d:1.0):2.0):2.0);
```

## Test 2 (only for UPGMA)

Input

	a	b	c
a	0	2	3
b		0	3
c			0

Output

```
(c:1.5,(a:1,b:1)d:0.5)e;
```

### Test 3 (only for UPGMA)

#### Input

	a	b	c
a	0	3	6
b		0	6
c			0

#### Output

(c:3, (a:1.5,b:1.5) d:1.5) e;