UPGMA

Original matrix:

-	a	b	c	d	e	f
a	0	15	24	29	25	37
b		0	32	31	23	43
c			0	30	43	49
d				0	45	57
e					0	55
f						0

Smallest entry is 15, which is the distance between 'a' and 'b', so we group these together to form 'ab'.
Since |a| = |b| = 1, the UPGMA algorithm behaves no differently to the WPGMA in this instance, so we are simply taking the mean.
(24+32)/2 = 28 , (29+31)/2 = 30 , (25+23)/2 = 24 , (37+43)/2 = 40

-	a	ab	b	c	d	e	f
a	0		15	24	29	25	37
ab		0		28	30	24	40
b			0	32	31	23	43
c				0	30	43	49
d					0	45	57
e						0	55
f							0

Deleting rows and columns 'a' and 'b' gives us:

-	ab	c	d	e	f
ab	0	28	30	24	40
c		0	30	43	49
d			0	45	57
e				0	55
f					0

Smallest entry is 24, which is the distance between 'ab' and 'e', so we group these together to form 'abe'.
Since |ab| = 2 and |e| = 1, the UPGMA algorithm does behave differently to the WPGMA in this instance. So the calculations are as follows:
(2*28+43)/3 = 33 , (2*30+45)/3 = 35 , (2*40+55)/3 = 45

-	ab	abe	c	d	e	f
ab	0		28	30	24	40
abe		0	33	35		45
c			0	30	43	49
d				0	45	57
e					0	55
f						0

Deleting rows and columns 'ab' and 'e' gives us:

-	abe	c	d	f
abe	0	33	35	45
c		0	30	49
d			0	57
f				0

Smallest entry is 30, which is the distance between 'c' and 'd', so we group these together to form 'cd'.
Since |c| = |d| = 1, the UPGMA algorithm behaves no differently to the WPGMA in this instance, so we are simply taking the mean.
(33+35)/2 = 34 , (49+57)/2 = 53

-	abe	c	cd	d	f
abe	0	33	34	35	45
c		0		30	49
cd			0		53
d				0	57
f					0

Deleting rows and columns 'c' and 'd' gives us:

-	abe	cd	f
abe	0	34	45
cd		0	53
f			0

Smallest entry is 34, which is the distance between 'abe' and 'cd', so we group these together to form 'abcde'.

Since |abe| = 3 and |cd| = 2, the UPGMA algorithm does behave differently to the WPGMA in this instance. So the calculations are as follows:

(3*45+2*53)/5 = 48.2

-	abe	abcde	cd	f
abe	0		34	45
abcde		0		48.2
cd			0	53
f				0

Deleting rows and columns 'abe' and 'cd' gives us:

-	abcde	f
abcde	0	48.2
f		0

48.2 is the smallest entry. Which is the distance between 'abcde' and 'f'.

-	abcde	abcdef	f
abcde	0		48.2
abcdef		0	
f			0

Delete rows and columns 'abcde' and 'f'.

-	abcdef
abcdef	0

Now there are no data entries left, so our algorithm has finished, and the phylogenetic tree looks like this: