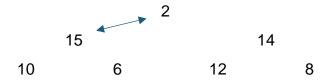
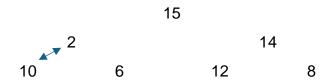
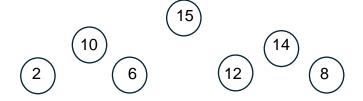
a) Bottom-up

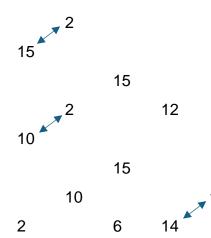


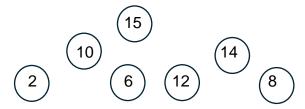






b) Top-down





c) It is not always true that the two algorithms will yield the same heap for the same input

P2.

Char	Т	С	Α	**
Shift	1	3	6	11

Т	Т	Α	Т	Α	G	Α	Т	С	Т	С	G	Т	Α	Т	Т	С	Т	Т	Т	Т	Α	Т	Α	G	Α	Т	С	Т	С	С	Т	Α	Т	Т	С	Т	Т	Т
Т	С	С	Т	Α	Т	Τ	C	Т	Т	Т																												
			Т	О	C	Т	Α	Т	Τ	C	Т	Т	Т																									
									Т	С	С	Τ	Α	T	Т	C	Т	Т	Т																			
										Т	С	C	Т	Α	Т	Т	С	Т	Т	Т																		
											Τ	C	С	Т	Α	Т	Т	С	Т	Т	Т																	
																	Т	С	C	Т	Α	Т	Τ	С	Т	Τ	Т											
																				Т	С	С	Τ	Α	Т	Τ	С	Т	Т	Τ								
																							Τ	С	С	Τ	Α	Т	Т	С	Т	Т	T					
																								Т	С	C	Т	Α	Т	Τ	C	Т	T	Т				
																									Τ	С	С	Τ	Α	Τ	Τ	С	Т	Т	Τ			
																												Т	С	С	Т	Α	T	T	С	T	Т	Т

P3.

K	63	42	45	64	53	41
K mod 11	8	9	1	9	9	8

a.

0	1	2	3	4	5	6	7	8	9	10
	45							63	42	
								41	64	
									53	

Largest number of key comparisons: 3

b.

0	1	2	3	4	5	6	7	8	9	10
53	45	41						63	42	64

Largest number of key comparisons: 6