Liubov Shilova (still no matriculation number)
Merwyn Francis Quadras (2581654)

Exercise 1

r	Suffixes in lexicographical order
0	$
1	*A B A C C B A C* $
2	*A C* $
3	*A C C A B A C C B A C* $
4	*A C C B A C* $
5	*B A C* $
6	*B A C C A B A C C B A C* $
7	*B A C C B A C* $
8	*C* $
9	*C A B A C C B A C* $
10	*C B A C* $
11	*C C A B A C C B A C* $
12	*C C B A C* $

r = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

1. **pos** = [12, 4, 10, 1, 6, 9, 0, 5, 11, 3, 8, 2, 7]

2. **lcp** = [-1, 0, 1, 2, 3, 0, 3, 4, 0, 1, 1, 1, 2, -1]

3. **RMQ**:

Sparse table: ST[k][i] = min(ST[k-1][i], ST[k-1][i + 2^{k-1}])

Lcp, k = 0	-1	0	1	2	3	0	3	4	0	1	1	1	2	-1
k = 1	-1	0	1	2	0	0	3	0	0	1	1	1	-1	
k = 2	-1	0	1	0	0	0	0	0	0	1	1	-1		
k = 3	-1	0	0	0	0	0	0	0	-1					
k = 4	-1													

Exercise 2

1. *S = summer*$

F L
$ summe r
e r$sum m
m er$su m
m mer$s u
r $summ e
s ummer $
u mmer$ s

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BWT = rmmue$s

LF = [4, 2, 3, 6, 1, 0, 5]

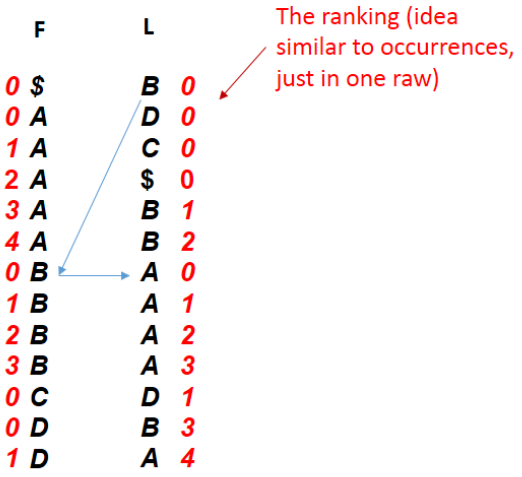
C-array:

C[$]	C[e]	C[m]	C[r]	C[s]	C[u]
0	1	2	4	5	6

Occurrences table:

	r	m	m	u	e	$	s
	0	1	2	3	4	5	6
Occ ($)	0	0	0	0	0	1	1
Occ (e)	0	0	0	0	1	1	1
Occ (m)	0	1	2	2	2	2	2
Occ (r)	1	1	1	1	1	1	1
Occ (s)	0	0	0	0	0	0	1
Occ (u)	0	0	0	1	1	1	1

2.



1) Look at B 0. We know, that we need to have 1$+5A before that. So it should be on 6th position in F.
2) Same to other characters

We just sort them and get F

3)From the first raw we know, that B will come before $. So our string will end with B$.
4) This B is the first B we meet in F (skipping $ and A). And we see it on the 6th position, and we look at the A, which should be before this B. So now we have AB$ as the end of our string.

We proceed

And get

This!!! **ABABADCABABDAB$**

3. Importance of $!!! Example: strings AB and BA

Without $:

String one: AB
String 2: BA
For both strings:

Permutation	BWT
A**B**	**BA**
B**A**	

With $:

String one: BA$
String 2: AB$
1:

Permutation	BWT
$B**A**	**AB$**
A$**B**	
BA**$**	

2:

Permutation	BWT
$A**B**	**B$A**
AB**$**	
B$**A**	