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ICS2022 Problem Sheet #1

Problem 01: minimum spanning trees

- we apply Kruskal's Algorithm, taking into consideration the minimization of cost.

initialization, C=0

$E = \{\}$

$Z = \{\{a\},\{b\},\{c\},\{d\},\{e\},\{f\}\}$

Step 1: $E = \{(a,f)\}$, C = 8

$Z = \{\{a,f\},\{b\},\{c\},\{d\},\{e\}\}$

Step 2: $E = \{(a,f),(e,f)\}$, C = 9

$Z = \{\{a,f,e\},\{b\},\{c\},\{d\}\}$

Step 3: $E = \{(a,f),(e,f),(d,f)\}$, C = 11

$Z = \{\{a,f,e,d\},\{b\},\{c\}\}$

Step 4: $E = \{(a,f),(e,f),(d,f),(c,f)\}$, C = 15

$Z = \{\{a,f,e,d,c\},\{b\}\}$

Step 5: $E = \{(a,f),(e,f),(d,f),(c,f),(b,f)\}$, C = 21

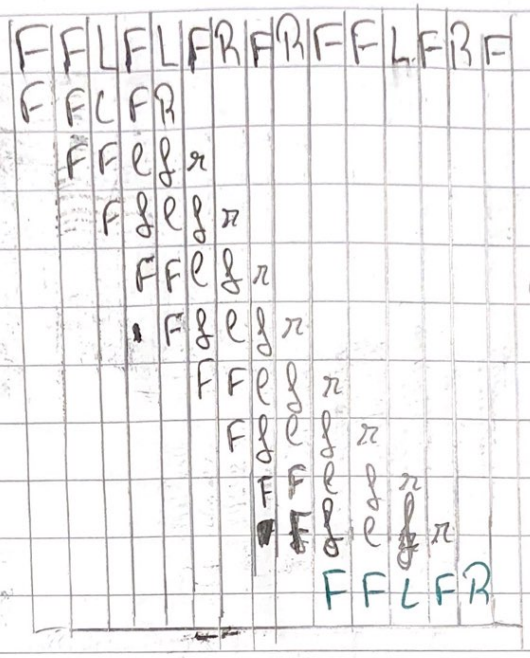
$Z = \{\{a,f,e,d,c,b\}\}$

Problem 1.2:

* we have t = FFLFLFRFRFFLFRF
and p = FFLFR

a-)

Naïve String



Alignments = 10

Comparisons = 22

b-)

Alignments = 6

Comparisons = 16

Problem 1.3:

a-] The comparaison operators have no associativity. Hence, an expression like True == True == True has no defined evaluation order. A Haskell compiler/interpreter generates a "precedence parsing error"

b-] The $ operator is right associative and precedence level of 0. (Lowest possible precedence level)
The infix notation of the expression is

2 ^ (5 * (2+3))

(^) 2 $ (*) 5 $ (+) 2 3 = (^) 2 $ (*) 5 $ (3+2)
= (^) 2 (5*5)
= 2 ^ (5 * (2+3))

Problem 1.2: (suite)

c-]

	F	F	L	F	R
	0	1	2	3	4
F	-	-	0	-	0
L	0	1	-	0	1
R	0	1	2	3	-
*	0	1	2	3	4