

Rick Sullivan
 Professor Tran
 Algorithms
 31 May 2013

Homework #6

1.

$String = aabaabaabaab$
 $z =$

$String = a\underline{a}baabaabaab$
 $z = 1$

$String = aa\underline{b}aabaabaab$
 $z = 10$

$String = aaba\underline{a}abaabaab$
 $z = 109$

Now we can use previously computed values for the rest.

$String = aaba\underline{a}baabaab$
 $z = 1091$

$String = aaba\underline{a}baabaab$
 $z = 10910$

$String = aaba\underline{a}baabaab$
 $z = 109106$

$String = aaba\underline{a}baabaab$
 $z = 1091061$

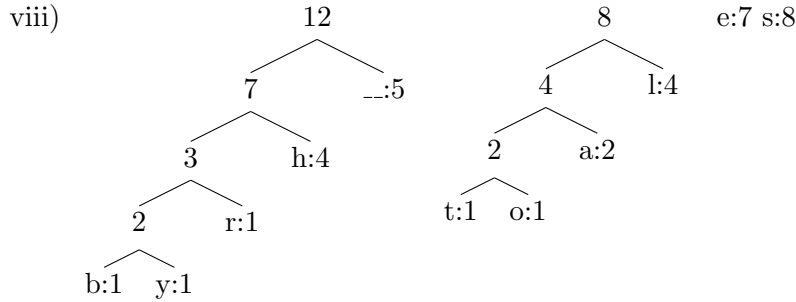
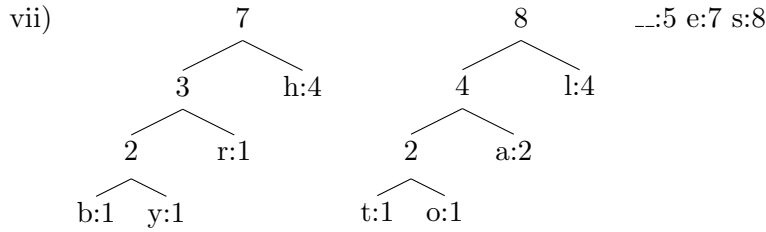
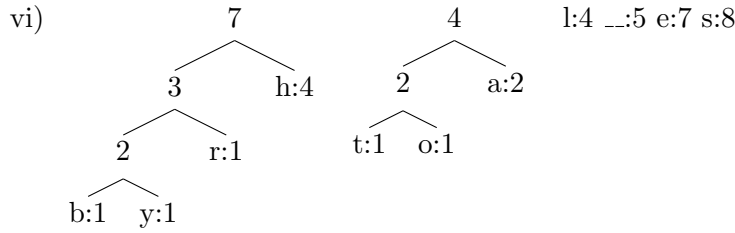
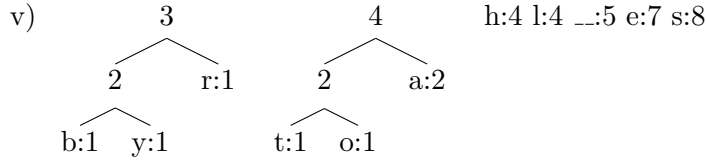
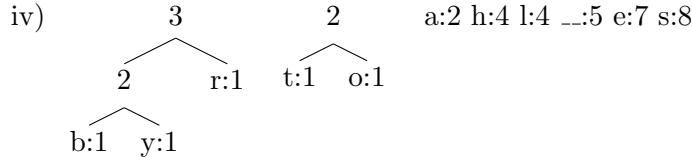
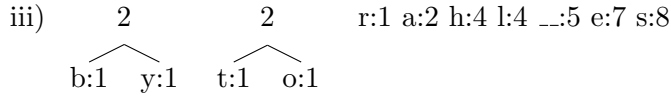
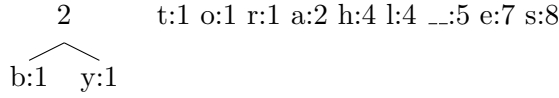
$String = aaba\underline{a}baabaab$
 $z = 10910610$

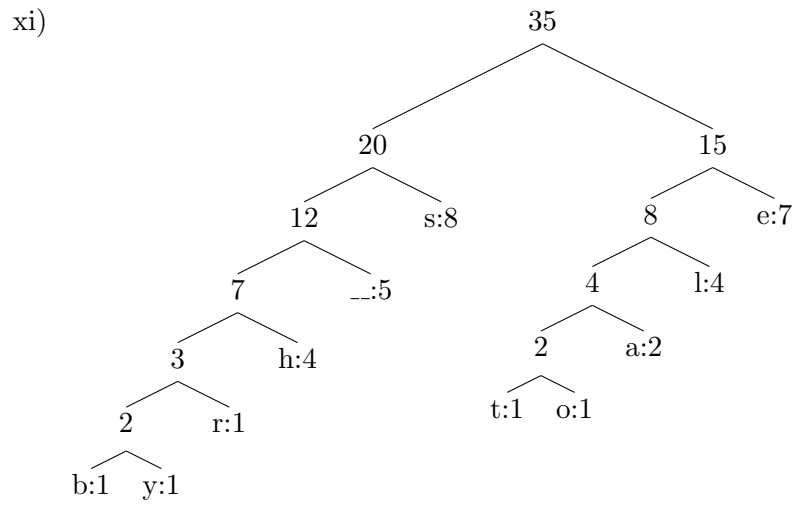
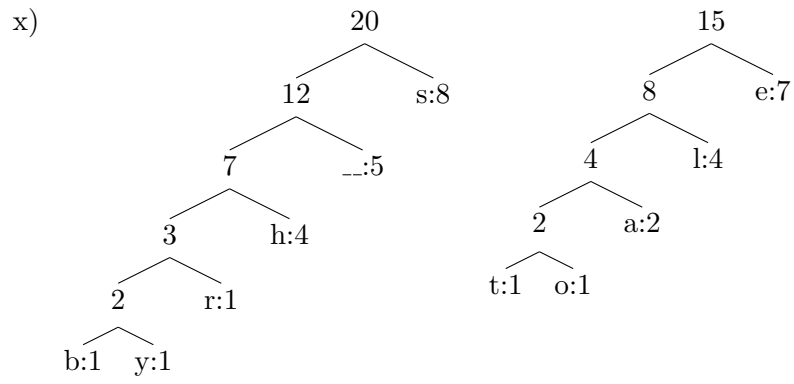
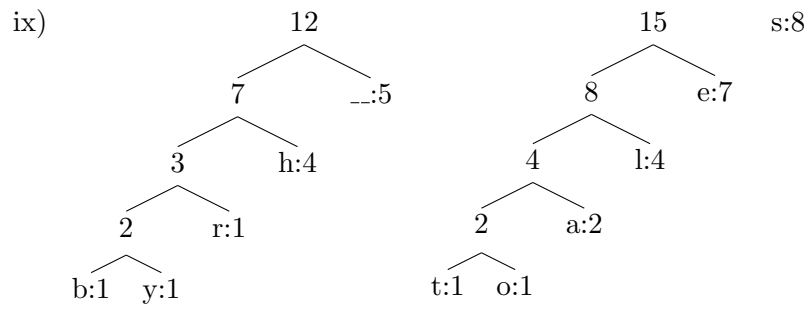
$String = aaba\underline{a}baabaab$
 $z = 109106103$

$String = aaba\underline{a}baabaab$
 $z = 1091061031$

$String = aaba\underline{a}baabaab$
 $z = 10910610310$

2. i) s:8 h:3 e:7 __:5 l:4 a:2 b:1 y:1 t:1 o:1 r:1
 Sorted: b:1 y:1 t:1 o:1 r:1 a:2 h:4 l:4 __:5 e:7 s:8
- ii) Left branches represent 0's, right branches represent 1's.





xii)

$b = 000000$
 $y = 000001$
 $r = 00001$
 $h = 0001$
 $-- = 001$
 $s = 01$
 $e = 11$
 $l = 101$
 $a = 1001$
 $t = 10000$
 $o = 10001$

- | | |
|--|---|
| 3. i) Initialize dictionary 0x00 - 0x08F
(first 128 entries) | Output: 0x6C
Add to dictionary: 'll' in spot 0x86 |
| ii) <u>Start:0</u>
Longest entry in dict: 's' 0x73
Output: 0x73
Add to dictionary: 'sh' in spot 0x80 | ix) <u>Start:7</u>
Longest entry in dict: 'l' 0x6C
Output: 0x6C
Add to dictionary: 'ls' in spot 0x87 |
| iii) <u>Start:1</u>
Longest entry in dict: 'h' 0x68
Output: 0x68
Add to dictionary: 'he' in spot 0x81 | x) <u>Start:8</u>
Longest entry in dict: 's' 0x73
Output: 0x73
Add to dictionary: 's_' in spot 0x88 |
| iv) <u>Start:2</u>
Longest entry in dict: 'e' 0x65
Output: 0x65
Add to dictionary: 'e_' in spot 0x82 | xi) <u>Start:9</u>
Longest entry in dict: 's' 0x83
Output: 0x83
Add to dictionary: 'se' in spot 0x89 |
| v) <u>Start:3</u>
Longest entry in dict: 'l' 0x20
Output: 0x20
Add to dictionary: 'ls' in spot 0x83 | xii) <u>Start:11</u>
Longest entry in dict: 'e' 0x65
Output: 0x65
Add to dictionary: 'ea' in spot 0x8A |
| vi) <u>Start:4</u>
Longest entry in dict: 's' 0x73
Output: 0x73
Add to dictionary: 'se' in spot 0x84 | xiii) <u>Start:12</u>
Longest entry in dict: 'a' 0x61
Output: 0x61
Add to dictionary: 'as' in spot 0x8B |
| vii) <u>Start:5</u>
Longest entry in dict: 'e' 0x65
Output: 0x65
Add to dictionary: 'el' in spot 0x85 | xiv) <u>Start:13</u>
Longest entry in dict: 'sh' 0x80
Output: 0x80
Add to dictionary: 'she' in spot 0x8C |
| viii) <u>Start:6</u>
Longest entry in dict: 'l' 0x6C | xv) <u>Start:15</u>
Longest entry in dict: 'el' 0x85 |

	Output: 0x85	xxiii) <u>Start:26</u>	
	Add to dictionary: 'ell' in spot 0x8D	Longest entry in dict: '_se' 0x89	
xvi) <u>Start:17</u>		Output: 0x89	
	Longest entry in dict: 'ls' 0x87	Add to dictionary: '_sea' in spot 0x95	
	Output: 0x87		
	Add to dictionary: 'ls_' in spot 0x8E	xxiv) <u>Start:29</u>	
xvii) <u>Start:19</u>		Longest entry in dict: 'as' 0x8B	
	Longest entry in dict: '_' 0x20	Output: 0x8B	
	Output: 0x20	Add to dictionary: 'ash' in spot 0x96	
	Add to dictionary: 'b' in spot 0x8F	xxv) <u>Start:31</u>	
xviii) <u>Start:20</u>		Longest entry in dict: 'h' 0x68	
	Longest entry in dict: 'b' 0x62	Output: 0x68	
	Output: 0x62	Add to dictionary: 'ho' in spot 0x97	
	Add to dictionary: 'by' in spot 0x90	xxvi) <u>Start:32</u>	
xix) <u>Start:21</u>		Longest entry in dict: 'o' 0x6F	
	Longest entry in dict: 'y' 0x79	Output: 0x6F	
	Output: 0x79	Add to dictionary: 'or' in spot 0x98	
	Add to dictionary: 'y_' in spot 0x91	xxvii) <u>Start:33</u>	
xx) <u>Start:22</u>		Longest entry in dict: 'r' 0x72	
	Longest entry in dict: '_' 0x20	Output: 0x72	
	Output: 0x20	Add to dictionary: 're' in spot 0x99	
	Add to dictionary: 't' in spot 0x92	xxviii) <u>Start:34</u>	
xxi) <u>Start:23</u>		Longest entry in dict: 'e' 0x65	
	Longest entry in dict: 't' 0x74	Output: 0x65	
	Output: 0x74	Add to dictionary: 'eETX' in spot 0x9A	
	Add to dictionary: 'th' in spot 0x93	xxix) <u>Start:35</u>	
xxii) <u>Start:24</u>		Longest entry in dict: 'ETX' 0x03	
	Longest entry in dict: 'he' 0x81	Output: 0x03	
	Output: 0x81	Done.	
	Add to dictionary: 'he_' in spot 0x94		

Final output is: 73 68 65 20 73 65 6C 6C 73 83 65 61 80 85 87 20 62 79 20 74 81 89 8B 68 6F
72 65 03