CSE 2320

Homework: Notes 5-7

1. 9.21

2. 9.22

3. 9.28

4. 9.30

5. Give an optimal Huffman code tree for the provided symbols and probabilities. In addition, compute the expected number of bits per symbol.

```
A  .15      B  .2       C  .15      D  .13      E  .2       F  .07      G  .1
```

6. Solve the following instance of the activity scheduling problem using the greedy method.

Activity	Start	Finish
A	1	4
B	3	8
C	7	12
D	11	16
E	5	10
F	6	9
G	2	15
H	13	14

7. Complete the following instance of the optimal matrix multiplication ordering problem, including the tree showing the optimal ordering.

```
   p[0]=4      p[1]=3      p[2]=4      p[3]=6      p[4]=3      p[5]=6

        1           2           3           4           5

1     0   0    48   1   144   1   144   1   ???   ?

2   -------      0   0    72   2   108   2   162   4

3   -------   -------      0   0    72   3   144   4

4   -------   -------   -------      0   0   108   4

5   -------   -------   -------   -------      0   0
```

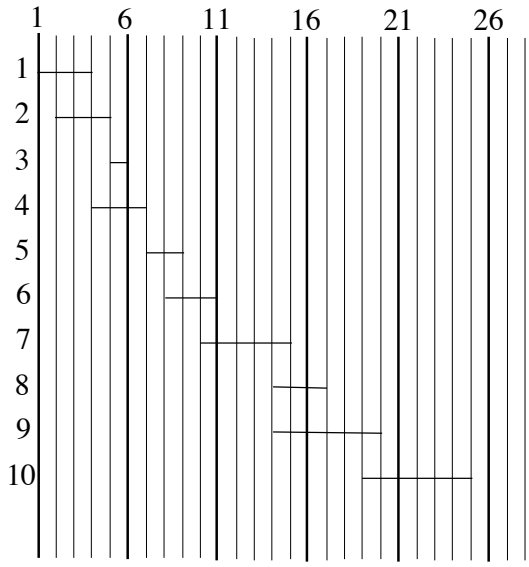
8. Find an LCS for 012012012 and 210210210.

9. Find an LIS for 1 3 2 5 4 1 3 4 5 2.

10. Find an LSIS for 1 3 2 5 4 1 3 4 5 2.

11. Find a subset sum of 16 for 3 4 7 8 9.

12. Use DP to solve the following instance of weighted interval scheduling.



	v_i	p_i	$m(i)$
1	1	0	
2	5	0	
3	3	2	
4	8	1	
5	1	4	
6	2	4	
7	3	5	
8	1	6	
9	4	6	
10	1	8	

13. Find the greedy solution to the 0/1 unbounded knapsack example in Notes 7.

14. Use DP to solve the 0/1 unbounded knapsack with a capacity of 47 and the following items:

i	0	1	2	3
size	10	14	16	20
val	11	13	17	19