



National University of Computer & Emerging Sciences, Karachi
Fall-2017 CS-Department
Quiz 2 (A)



12th October 2017, 10:00 am – 10:20 am

Course Code: CS302	Course Name: Design and Analysis of Algorithm
Instructor Name / Names: Subhash Sagar	
Student Roll No:	Section: D

Time: 20 minutes.

Max Marks: 5 points

Question 1: Let $A_1 \dots A_5$ be matrices with dimension 10×5 , 5×8 , 8×15 , 15×20 , 20×6 , respectively. Let $C_{i,j}$ be the smallest number of scalar multiplications needed for computing the matrix product $A_i A_{i+1} \dots A_j$, assuming that multiplying an $r \times s$ matrix and an $s \times t$ matrix take $r \times s \times t$ scalar multiplications. Solve the given matrix chain multiplication problem and Mark each of the following statements by T (=True) or F (=False).

1. $C_{2,5}$ is computed before $C_{1,3}$
2. $C_{1,4} = 3100$.
3. $C_{2,5}$ is derived from $C_{2,3}$ and $C_{4,5}$.
4. The optimal order to multiply $A_1 \dots A_5$ with fewest number of scalar multiplications is $(A_1 ((A_2 A_3) (A_4 A_5)))$.



National University of Computer & Emerging Sciences, Karachi
Fall-2017 CS-Department
Quiz 2 (B)



12th October 2017, 10:00 am – 10:20 am

Course Code: CS302	Course Name: Design and Analysis of Algorithm
Instructor Name / Names: Subhash Sagar	
Student Roll No:	Section: D

Time: 20 minutes.

Max Marks: 5 points

Question 1: Solve the following **0/1 knapsack** problems using table.

a

```
number of items, n=4  
  
weight of items, w[]=2 3 4 5  
value of items, v[]=3 4 5 6  
  
capacity of knapsack, M=5
```

b

```
n=3  
w[]=3 2 1  
v[]=5 3 4  
  
M=5
```



National University of Computer & Emerging Sciences, Karachi
Fall-2017 CS-Department
Quiz 1 (A)



13th October 2017, 9:00 am – 9:20 am

Course Code: CS302	Course Name: Design and Analysis of Algorithm
Instructor Name / Names: Subhash Sagar	
Student Roll No:	Section: B

Time: 20 minutes.

Max Marks: 5 points

Question 1: Let $A_1 \dots A_5$ be matrices with dimension $10 \times 20, 20 \times 30, 30 \times 40, 40 \times 50, 50 \times 60$, and respectively. Let $C_{i,j}$ be the smallest number of scalar multiplications needed for computing the matrix product $A_i A_{i+1} \dots A_j$, assuming that multiplying an $r \times s$ matrix and an $s \times t$ matrix take $r \times s \times t$ scalar multiplications. Solve the given matrix chain multiplication problem and Mark each of the following statements by T (=True) or F (=False).

1. $C_{2,5}$ is computed before $C_{1,3}$
2. $C_{1,4} = 3100$.
3. $C_{2,5}$ is derived from $C_{2,3}$ and $C_{4,5}$.

The optimal order to multiply $A_1 \dots A_5$ with fewest number of scalar multiplications is $(A_1 ((A_2 A_3) (A_4 A_5)))$.



National University of Computer & Emerging Sciences, Karachi
Fall-2017 CS-Department
Quiz 1 (B)



13th October 2017, 9:00 am – 9:20 am

Course Code: CS302	Course Name: Design and Analysis of Algorithm
Instructor Name / Names: Subhash Sagar	
Student Roll No:	Section: B

Time: 20 minutes.

Max Marks: 5 points

Question 1: Solve the following **0/1 knapsack** problems using table.

a

```
number of items, n=4  
  
weight of items, w[]=2 3 4 5  
value of items, v[]=3 4 5 6  
  
capacity of knapsack, M=5
```

b

```
n=5  
w[]=1 2 3 2 2  
v[]=8 4 0 5 3  
  
M=4
```



National University of Computer & Emerging Sciences, Karachi
Fall-2017 CS-Department
Quiz 1 (A)



13th October 2017, 2:00 pm – 2:20 pm

Course Code: CS302	Course Name: Design and Analysis of Algorithm
Instructor Name / Names: Subhash Sagar	
Student Roll No:	Section: E

Time: 20 minutes.

Max Marks: 5 points

Question 1: Let $A_1 \dots A_5$ be matrices with dimension $1 \times 2, 2 \times 15, 15 \times 30, 30 \times 50, 50 \times 15$, and respectively. Let $C_{i,j}$ be the smallest number of scalar multiplications needed for computing the matrix product $A_i A_{i+1} \dots A_j$, assuming that multiplying an $r \times s$ matrix and an $s \times t$ matrix take $r \times s \times t$ scalar multiplications. Solve the given matrix chain multiplication problem and Mark each of the following statements by T (=True) or F (=False).

1. $C_{2,5}$ is computed before $C_{1,3}$
2. $C_{1,4} = 220$.
3. $C_{2,5}$ is derived from $C_{2,3}$ and $C_{4,5}$.

The optimal order to multiply $A_1 \dots A_5$ with fewest number of scalar multiplications is $(A_1 ((A_2 A_3) (A_4 A_5)))$.



National University of Computer & Emerging Sciences, Karachi
Fall-2017 CS-Department
Quiz 1 (B)



13th October 2017, 2:00 pm – 2:20 pm

Course Code: CS302	Course Name: Design and Analysis of Algorithm
Instructor Name / Names: Subhash Sagar	
Student Roll No:	Section: E

Time: 20 minutes.

Max Marks: 5 points

Question 1: Solve the following questions using rod cutting problem. (**n=length of rod**)

a

```
n=5  
value[]= 2 3 7 8 10 for sizes 1,2,3,4,5 respectively
```

b

```
n=7  
value[]= 2 7 8 25 17 28 30
```