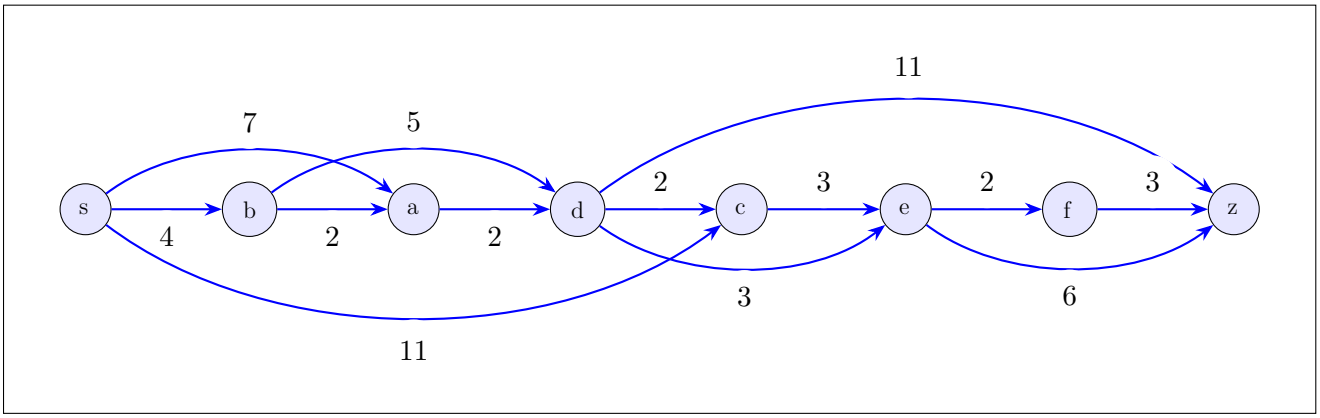
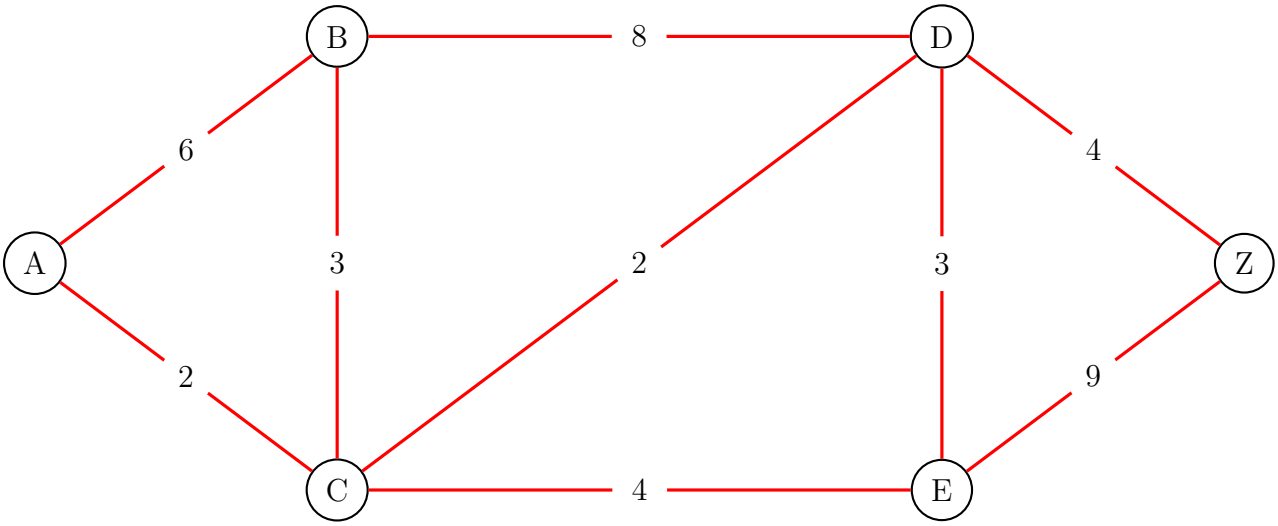
tear off

Data Sheet



Dag $D = (V, E)$



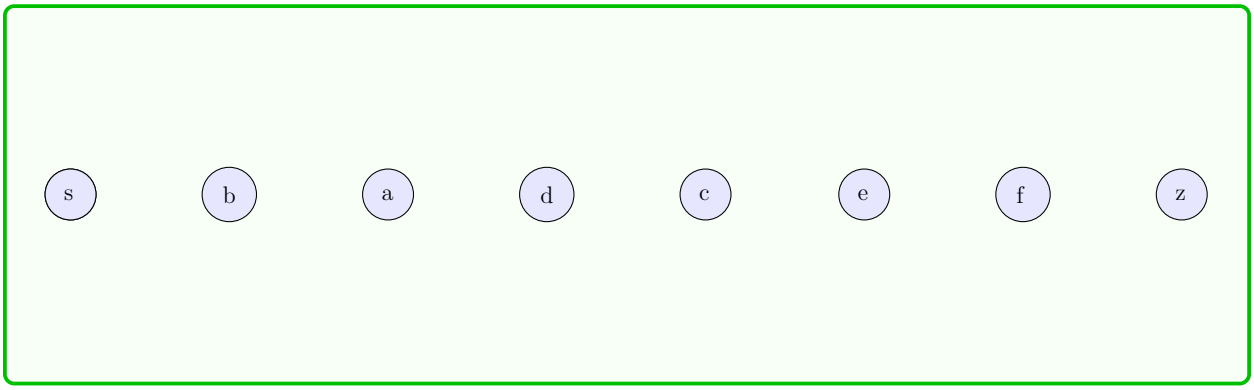
Graph $K = (V, E)$

CIS 3223 Homework 7 | **Name:**

Dr Anthony Hughes | **Temple ID (last 4 digits:**

1 (14 pts) (a) Consider the dag D.

Draw the reverse dag.



For each vertex $u \in V$, let dist(v) = shortest path from s to v. Complete the following table.

parent	s							
dist	0							
vertex	s	b	a	d	c	e	f	z

Draw the tree (horizontally) indicating the shortest path from s.

2 (14 pts) Consider the following $0-1$ knapsack problem with $W = 11$.

Item	Weight	Value ($)
1	4	18
2	5	21
3	2	9
4	3	14
5	6	27

Complete the following table and determine the max solution using all 5 items and capacity W = 11. .

0	1	2	3	4	5	6	7	8	9	10	11

Max value _____ Items selected (circle): 1 2 3 4 5

What is the max value if $W = 9$ and only the first four items can be taken? _____

3 (8 pts) Consider the undirected graph K

Running Dijkstra's algorithm we have the following data after `deletemin` → C

parent	A	A	A			
S	-1	0	-1	0	0	0
dist	0	6	2	∞	∞	∞
pos	-1	1	-1	4	3	2
vertex	A	B	C	D	E	Z

H	B	Z	E	D	4

neighbors of C = {~~A~~, B, D, E}.

Execute the `updates` of the unvisited neighbors.

Edge CB

parent	A		A			
S	1	0	1	0	0	0
dist	0		2			
pos	-1		-1			
vertex	A	B	C	D	E	Z

H					4

Edge CD

parent	A		A			
S	1	0	1	0	0	0
dist	0		2			
pos	-1		-1			
vertex	A	B	C	D	E	Z

H					4

Edge CE

parent	A		A			
S	1	0	1	0	0	0
dist	0		2			
pos	-1		-1			
vertex	A	B	C	D	E	Z

H					4