A. OLAP and Data Warehouse (25%)

Consider the following table called **Movies**:

Movie	FemaleStar	MaleStar	TimeShowing	Genre	Budget (M$)
Oblivion	Kurylenko	Cruise	Apr 2013	Sci-Fi	120
The Hunger Games	Lawrence	Tucci	Mar 2012	Sci-Fi	78
Flight	Reilly	Washington	Nov 2012	Drama	31
Silver Linings Playbook	Lawrence	Cooper	Nov 2012	Comedy	21
Six Degrees of Separation	Graham	Smith	Dec 1993	Comedy	12
The Hangover	Graham	Cooper	Nov 2011	Comedy	35

and the following query called **Q_1**

```
SELECT FemaleStar, Genre, AVG(Budget) AS AvgB
FROM Movies
WHERE Budget <= 100
AND Genre IN {'Sci-Fi', 'Comedy'}
GROUP BY FemaleStar, Genre
```

1) Show the result of query **Q_1** by filling in the table below (you may not need to use all the rows and columns).

FemaleStar	Genre	AvgB		
Graham	Comedy	23.5		
Lawrence	Comedy	21		
Lawrence	Sci-Fi	78		

2) On the result you obtained in point 1), perform now a **rollup** operation on the **Genre** and show the result by filling in the table below (you may not need to use all the rows and columns)

FemaleStar	AvgB			
Graham	23.5			
Lawrence	49.5			

3) On the result obtained in point 2), perform now a **drill-down** operation on the **TimeShowing** dimension, keeping it at the "year" level. Show the result by filling in the table below (you may not need to use all the rows and columns)

FemaleStar	AvgB	TimeShowing		
Graham	12	1993		
Graham	35	2011		
Lawrence	49.5	2012		

4) Let $\mathbf{Q_2}$ be the same query as $\mathbf{Q_1}$ but with the "WITH ROLLUP" clause at the end. Show the result of query $\mathbf{Q_2}$ by filling in the table below (you may not need to use all the rows and columns)

FemaleStar	**Genre**	**AvgB**		
Graham	Comedy	23.5		
Lawrence	Comedy	21		
Lawrence	Sci-Fi	78		
Graham	ALL	23.5		
Lawrence	ALL	49.5		
ALL	ALL	36.5		