A. OLAP and Data Warehouse (25%)

Consider the following table called **Books**:

Title	Author	Publisher	DatePublished	Genre	Pages
War and Peace [WP]	Tolstoy	The Russian Messenger [TRM]	1869	Novel [N]	1225
The Hobbit [TH]	Tolkien	George Allen & Unwin [GAU]	1937	Fantasy/Sci-Fi [F]	310
Pride and Prejudice [PP]	Austen	Egerton [EGE]	1813	Novel [N]	392
The Lord of the Rings [LR]	Tolkien	George Allen & Unwin [GAU]	1954	Fantasy/Sci-Fi [F]	1137
Animal Farm [AF]	Orwell	Secker and Warburg [S&W]	1945	Novel [N]	112
1984 [1984]	Orwell	Secker and Warburg [S&W]	1949	Fantasy/Sci-Fi [F]	279

and the following query called **Q_1**

```
SELECT Author, Genre, Sum(Pages) AS SumPages
FROM Books
WHERE Pages <= 1200
GROUP BY Author, 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). [**Don't waste time: use abbreviations as indicated in square brackets!**]

Author	Genre	SumPages		
Tolkien	F	1447		
Austen	N	392		
Orwell	N	112		
Orwell	F	279		

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

Author	SumPages			
Tolkien	1447			
Austen	392			
Orwell	391			

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

Author	DatePublished	SumPages		
Tolkien	1930s	310		
Tolkien	1950s	1137		
Austen	1810s	392		

Orwell	1940s	391		

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)

Author	**Genre**	**SumPages**		
Tolkien	F	1447		
Austen	N	392		
Orwell	N	112		
Orwell	F	279		
Tolkien	ALL	1447		
Austen	ALL	392		
Orwell	ALL	391		
ALL	ALL	2230		