EBU5602 Database Tutorial 2 Solution

The following tables form part of a Library database held in an RDBMS:

```
Book       (ISBN, title, edition, year)
BookCopy   (copyNo, ISBN, available)
Borrower   (bNo, bName, bAddress)
BookLoan   (copyNo, dateOut, dateDue, bNo)
```

where Book   contains details of book titles in the library and the ISBN is the key.

BookCopy   contains details of the individual copies of books in the library and copyNo is the key. ISBN is a foreign key identifying the book title.

Borrower   contains details of library members who can borrow books and bNo is the key.

BookLoan   contains details of the book copies that are borrowed by library members and copyNo/dateOut forms the key. bNo is a foreign key identifying the borrower.

Formulate the following queries using **SQL**.

1. List all book titles published in the year 2012.

```
SELECT title FROM Book
WHERE year = 2012;
```

2. List all copies of the book title "Lord of the Rings" that are available for borrowing.

```
SELECT *
FROM Book b, BookCopy bc
WHERE b.ISBN = bc.ISBN AND
     title = 'Lord of the Rings' AND
     available = 'Y';
```

3. List the names of borrowers with overdue books.

```
SELECT bNo, bName
FROM Borrower br, BookLoan bl
WHERE br.bNo = bl.bNo AND
     dateDue < CURRENT_DATE();
```

4. How many copies of ISBN "0321" are currently available?

```
SELECT COUNT(copyNo)
FROM BookCopy
WHERE available = 'Y' AND ISBN = '0321';
```

5. Produce a report of book titles that have been borrowed by "Peter Pan".

```
SELECT title
FROM Borrower bw, Book b, BookCopy bc, BookLoan bl
WHERE bw.borrowerNo = bl.borrowerNo AND bl.copyNo = bc.copyNo
     AND bc.ISBN = b.ISBN AND borrowerName = 'Peter Pan';
```

6. Produce a report detailing how many times each book title has been borrowed.

```
SELECT ISBN, COUNT(*)
FROM BookCopy bc, BookLoan bl
WHERE bc.copyNo = bl.copyNo
GROUP BY ISBN;
```

7. Produce a report of book titles and the names of library members who have borrowed them, order by book title.

```
SELECT title, borrowerName
FROM Borrower bw, Book b, BookCopy bc, BookLoan bl
WHERE bw.borrowerNo = bl.borrowerNo
     AND bl.copyNo = bc.copyNo
     AND bc.ISBN = b.ISBN
ORDER BY title;
```