Question 6 (10 marks)

Consider a *linear hashed* file with the following properties

- initially with 2 (empty) pages in the file, *d* = 1, *sp* = 0
- able to hold up to 2 tuples per page
- an associated overflow file (initially empty, no pages)
- each page in the overflow file can also hold up to 2 tuples

A set of numeric keys (the numbers 1 to 32) are inserted into the file, in numeric order. Splits occur just *before* the insertion of the keys 6, 12, 18, 24, 30 The hash value of each key is simply the binary value of the number (e.g. hash(1) = `00000001`, hash(15) = `00001111`, and hash(21) = `00010101`).

Show the state of the file(s) at the following points:

a. immediately before each split operation (before inserting the new value)

b. immediately after each split operation and after inserting the new value

The state should include:

- the pages of the data file, with tuples indicated by key values
- the depth of the file (*d*), the position of the split pointer (*sp*)
- any overflow pages, linked to their corresponding data pages by arrows

An abstract example (**not using the above hash values**) of what a state might look like:

```
[0] 1,2 -> 11,12
[1] 3,4
[2] 5,6 -> 13
[3] 7,8 -> 14,15 -> 16
[4] 9,10

d = 2 sp = 1
```

This is a sample just to show the format of states. It bears no relation to the hash values in this question.

Instructions:

- Type your answer to this question into the file called `q6.txt`
- Submit via: **`give cs9315 exam_q6 q6.txt`**
  or via: Webcms3 > exams > Final Exam > Q6 submission > Make Submission

End of Question