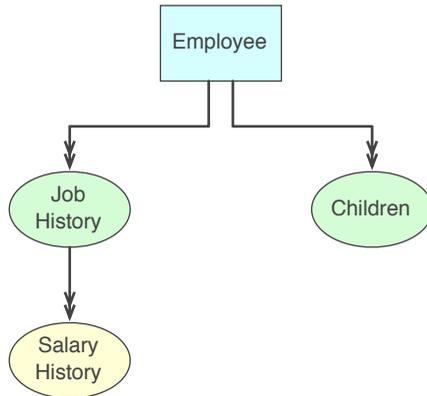
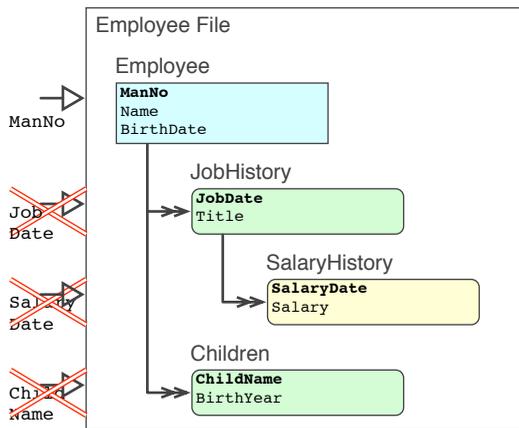


1.4. Normal Form

Fig 3(a) Unnormalised Set (Hierarchical Model)



- The open arrow indicates a pointer (not a Key)
- The double-head indicates many child records, forming a chain, with first and last pointers in the parent record
 - That is, a Repeating Group
 - That is, a **Non-simple Domain**.



This is the Hierarchical Model of the example given in the text

- As such (a model), it is logical, an abstraction of the physical, those details are excluded. It shows the information that a programmer requires: record types; fields; and navigation paths (hierarchy)
- The closed arrow indicates access by Key, ISAM (not pointer)
- **Access Path Dependence** means that:
 - there is no direct access to the subordinate record types
 - one had to access the single Key, then navigate the chain
 - such **Access Paths** had to be known, and programmed
 - thus causing severe limitations, a complete lack of **Data Independence**