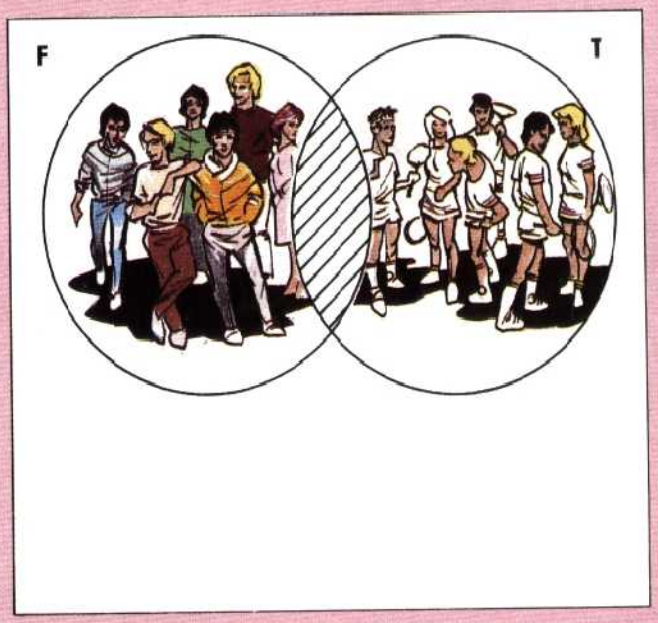
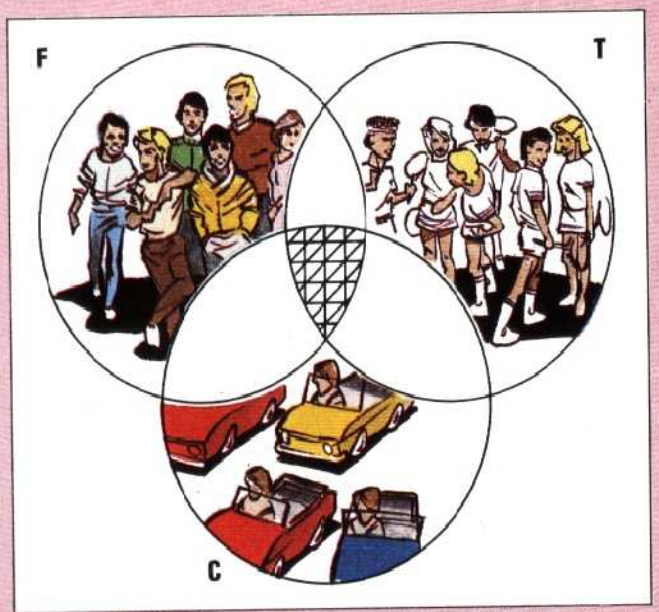
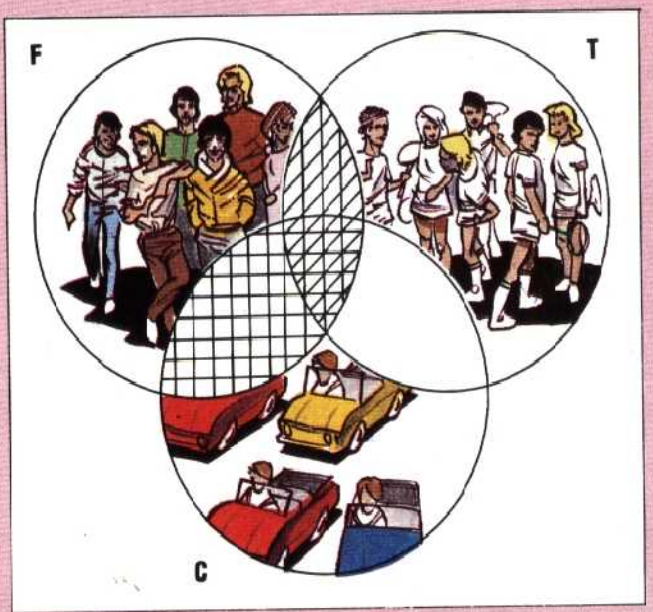
## Venn Diagrams


The square box represents the collection, or set, of all the people that are listed in the computer. Generally in Venn diagrams this is called the universal set. The circles within the square represent the individual sets. The friends are identified on the diagram as those people who lie within set F.

Not all the people will play tennis, but those who do are identified in set T. Since there will be some people who both play tennis and are friends, the two circles overlap (F∩T).

Set C identifies those people who own a car. This set overlaps the other two and the people who satisfy all three conditions are contained in the area where all three circles intersect (F ∩ T ∩ C). The last diagram represents the same sets, (F,T,C,) but the conditions that need to be satisfied have changed. You have decided that you would like either to play tennis or go for a drive. The set of acquaintances who are friends and play tennis is shaded with diagonal lines. The set of acquaintances who are friends and own a car is shaded with horizontal lines. The combination of these two shaded areas represents the friends with whom you could play tennis or go for a drive

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number, hobbies, etc. One afternoon you decide you want to play tennis at a court on the other side of town. You need a friend (as opposed to an acquaintance) who plays tennis and owns a car. Your computer is instructed to print out the name and telephone number of every person who satisfies all three conditions: plays tennis AND owns a car AND is a friend. The program on the left first asks for information about each acquaintance: are they friends, do they have a car, do they play tennis? It is assumed that you have 10 acquaintances but you can change the number of acquaintances to any you want (remembering to change the 10 in the bracket of the DIM statement in line 10). The list is then scanned using an IF . . . THEN command into which has been inserted a multiple condition. Most BASICS allow the IF . . . THEN command to work on a condition made up of separate subconditions joined by the commands AND and OR. Finally, the name and telephone number of any acquaintance who satisfies the condition — that they are a friend and play tennis and have a car — is printed.

Very complex combinations of logical functions are found in some programs. Boole's algebra, which was little more than a curiosity in his own lifetime, has come into its own in the age of the computer.