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Encircling of Groups:

After constructing K – map, the pairs quads and octets of adjacent 1s in the K – map are made for getting the minimal Boolean expression. A pair eliminates one variable with its complement; a quad and an octet eliminate two variables and three variables respectively with their complements.
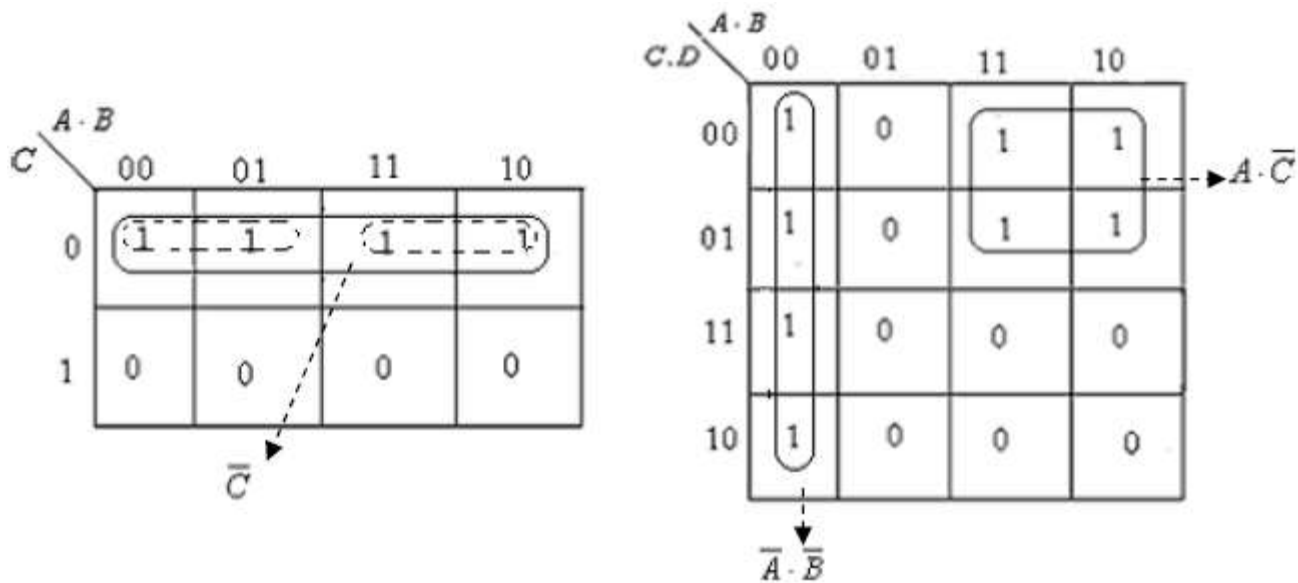
Pairs:

In the three-variable or four variable K – map having 1s and 0's entry, two adjacent 1s (vertically or horizontally) are encircled. The diagonally adjacent 1s are never encircled.
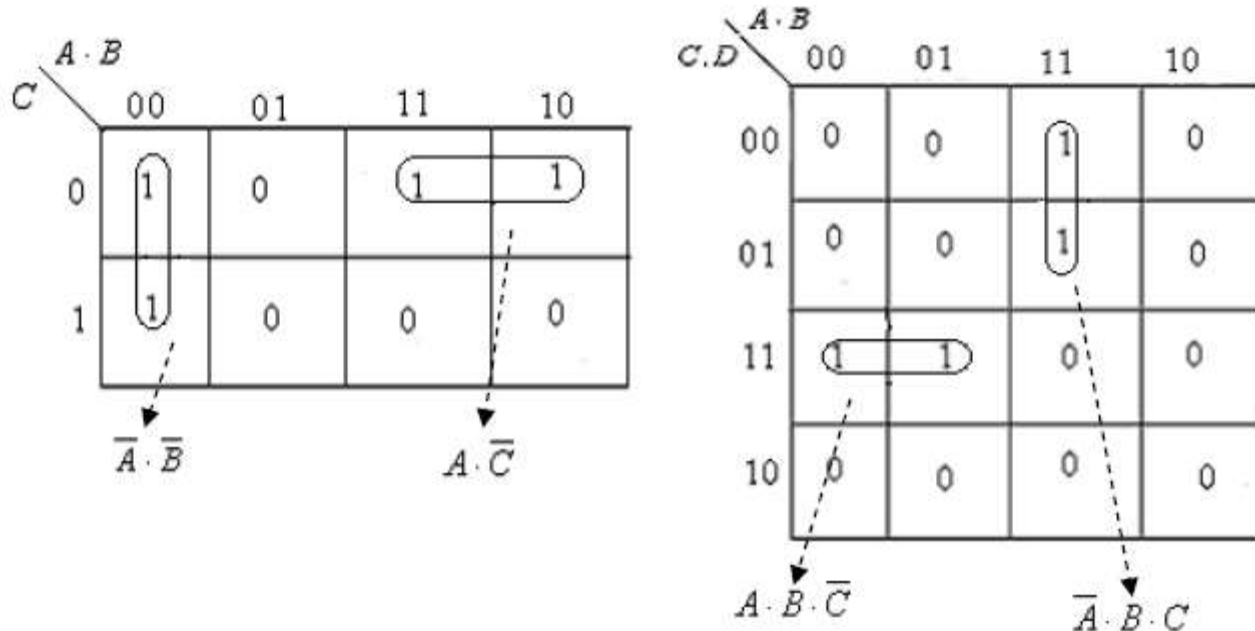
Quads:

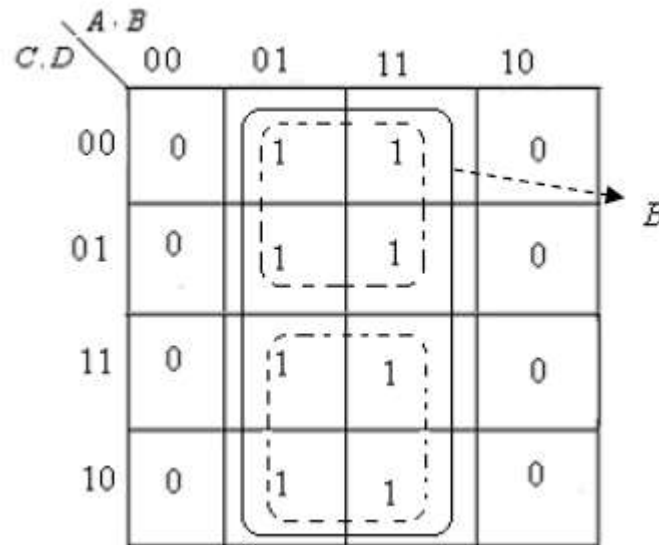In the K –map if four 1s are adjacent in a row or column or in the form of a square, then these 1s are encircled called as quads.

Octets:

The eight adjacent 1s are encircled in a K – map known as octet. Figure shows the encircled octet (solid line) in a K – map of 4 variables.

Overlapping groups: While making encircled groups in the K – map, it is always tried to have the groups of largest number of 1s first than others, i.e. octets are encircled first than quads and than pairs. It is important to use same 1 more than once. In other words same 1 may be used in more than one encircled groups. Such groups are called as the overlapped groups. Some overlapped groups are shown in figure

The terms for each encircled groups are written in the same manner as is done for normal pairs, quads and octets.