The logic diagram (also called an N/S chart) is a tool for designing computer programs, independent of the programming language used for coding. It is named for the two computer scientists who created it in 1971, Nassi and Schneiderman. Unlike the flowchart, an earlier tool, it enforces structured program design.

There are only three code (or program) structures in programming: sequence, selection, and repetition (loop). There are three corresponding shapes used in a logic diagram, which are combined to show the flow of control of the program. (The flow of control is simply the order in which program statements are executed). The outer shape of the diagram is always a rectangle.

Alternate forms:

<table>
<thead>
<tr>
<th>do</th>
<th>CASE (switch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>while (numTries &lt; MAX)</td>
<td></td>
</tr>
<tr>
<td>total = 0</td>
<td>sequencing</td>
</tr>
<tr>
<td>while (total &lt; MAX)</td>
<td>loop (for, while)</td>
</tr>
<tr>
<td>Total &gt; MIN?</td>
<td>decision</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
</tr>
</tbody>
</table>
An oval shape is used for the program (or module) name.

```
ConvertTemp
```

```
while user not done
  display user prompt
  get conv. direction
  get temp to convert
  True
    C to F?
    F = 9/5 * temp + 32
  False
    C = 5/9 * (temp - 32)
  display new temp
```

It is also used to "segment" out a sub-diagram from a larger diagram.
More Examples

**SEQUENCE**

Sequential statements are always executed when the flow of control of the program reaches them. These statements perform input, output and processing of data.

**SELECTION**

The Selection structure provides branching in the flow of control. A condition is tested. If true, control flows down the true side of the structure. If false, down the false side. Only one path will be executed at any given time during program execution.

The condition is indicated by a question mark ("?"). Here the false path is on the right, but that is arbitrary. Notice the sequential statements inside the body of the selection structure.
SELECTION

When there are more than two possible paths, use an alternate Selection structure called a SWITCH statement. It allows multiple paths.
There are two variations of the repetition structure (also called looping or iterative structure):

The first tests a condition at the TOP of the loop (while and for loops).

The second tests a condition at the BOTTOM of the loop (do while loop).