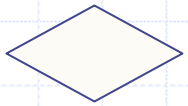
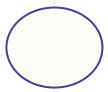
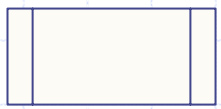
Compilers and Interpreters

- Compilers translate program code into machine language that the computer can understand
  before it is executed.
- Interpreters translate program code into machine language and execute the machine language.

Program Development

1. Analyze the problem (specs)
2. Devise an algorithm to solve the problem
3. Test the design
4. Code the program (don't forget to document the program)
5. Review the code
6. Enter the program
7. Run the program with test data
8. Maintain the program

Designing the program- FlowCharts

- Process 
- I/O 
- Flowline
- Decision 
- Terminal 
- Connector 
- Predefined Process 

These shapes can be found on the drawing toolbar in Word

FlowChart “Rules”

- Flow is top down
- Only one entry point
- Only one exit point
- No infinite loops
- No unreachable code

PseudoCode

- Uses English words
- Resembles QBasic code

```
Clear Screen
Discount = rate x sale price
If male then
    add 1 to male counter
Else
    add 1 to female counter
End if
```

PseudoCode “Rules”

- Begin with title statement

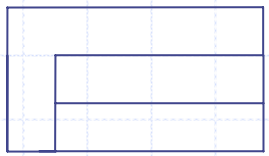
  Program : Sales Report
- End with terminal statement

  End: Sales Report
- Begin each statement with a new line
- Express assignment as formula or English-like statement
- Avoid logic structures not in the programming language
- Use indentation and other conventions associated with the logic structures in QBasic

Nassi-Scheiderman Charts
(structured flowcharts)

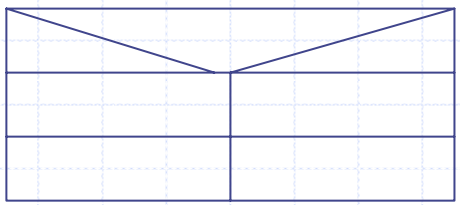
- Flow of control top down
- series of rectangles containing statements
- Logic structures:

Do while



Do until

If Then Else



Practice your skills

Write a flowchart (or Nassi-Schneiderman) to make a peanut butter and jelly sandwich. Make a decision between grape and strawberry jelly.