DATA MAN
public void bfs() {
    // BFS uses Queue data structure
    Queue q = new LinkedList();
    q.add(rootNode);
    visited[rootNode] = true;
    printNode(rootNode);

    while( !q.isEmpty() ){
        int n, child;
        n = (q.peek()).intValue();
        child = getUnvisitedChildNode(n);    // Returns -1 if no unvisited node left
        if ( child != -1 ) {
            // Found an unvisited node
            visited[child] = true;    // Mark as visited
            printNode(child);
            q.add(child);  // Add to queue
        } else{
            q.remove();                  // Process next node
        }
    }
}
Let **Data Man** BFS

```python
bfs i in G:
    if (i.name is "Bill"):
        print "My name is Bill"
    else
        print "I am not Bill"
end
end
```
WHO IS DATA MAN?

A language that helps manipulate large Data Sets easily.
BUZZZZZZZ

WORDS

READABLE

EASE OF USE

LESS CODE

PORTABLE

Dragon-Book-Compatible

ROBUST
num main():
    String my_name = "Jeremy"
    num my_age = 19

    //System.out.println("NO THANKS");
    if (my_age < 18):
        print "Hello " + my_name " is " + my_age + "-year-old!
        print "A year from now you will be " + (my_age + 1) + "\n"  
    end
end
WHY DATA MAN?

Graphs

Matrices

Types
BUILT IN GRAPHS & NODES

node a = "New York"

node b = "California"

graph CITES = a + b

"." operator CITIES.a = "Texas"

conditions apply: DATA MAN IS STILL TRAINING FOR THIS HE IS STILL A KID SO RELAX!
GRAPH TRAVERSAL

BFS & DFS

dfs node_var in graph_var:

    // some code here ...

end
THE MATIX
MATRIX DECLARATION & OPERATIONS

matrix \( A = \begin{bmatrix} 1, 2, 3; 4, 5, 6; 7, 8, 9 \end{bmatrix} \)

matrix \( B = \begin{bmatrix} 1, 2, 3; 4, 5, 6; 7, 8, 9 \end{bmatrix} \)

\( A + B \) Matrix addition
\( A - B \) Matrix subtraction
\( A \cdot B \) Dot product (of 2-dimensional matrices)
\( A \times B \) Cross product
\( |A| \) Determinant
\( \sim A \) Inverse
\( ||A|| \) Norm
COMPOUND TYPES

Swag!
THE MOST COMMONLY USED TYPES

type my_birthday = {num year, num month, num day}

type fb_contacts = {string name, num age, string hometown}

fb_contacts roshen = {"Roshen", 25, "Townsville"}
GIVE ME A BREAK!
DEMO TIME

Fingers Crossed!
DATAMAN'S SKELETON

- COFFEE
- DM LEX
- DM YACC
- CODE GENERATOR
- SEMANTIC CHECKS

(Diagram showing the flow between COFFEE, DM LEX, DM YACC, CODE GENERATOR, and SEMANTIC CHECKS, with Java logo on the left.)
PROJECT MISMANAGEMENT

Google Docs

GitHub

Evidence

Facebook Chat
PRO-CRASTINATION

Commits
LEARNED THE HARD WAY

• Not only Columbia has large Libraries - Apache does too
• Compiler is not this magic box
• A happy team is a productive team
• Version Control is important
• Learn to speak Java, C, Python, Chinese
• The name of the game is Agile!

May be hello word deadline too
WE ARE THE PROUD PARENTS

Huayu

Zefeng

Boxuan

Jeremy

Roshen

DADDY!
FACED WITH A LARGE DATA SET

HERE HE COMES TO YOUR RESCUE