Thinking Objects With A Procedural Brain

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Why Are You Here?

- You have a procedural brain
- You want/need to use OOP
- You don't know where to start
- Available publications are frustrating

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A Horror Story

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Procedures vs. Objects

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Why Procedures Are Familiar

- School teaches us to read and follow the directions.
- We learn from an early age to follow A-to-Z and 1-2-3.

Start $\longrightarrow$ **Finish**

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But Objects Are Familiar, Too

- They model real things.
- When we talk to a person, or watch a dog run, we interact with an object-based world.
- But a collection of objects seems more unpredictable than a set of procedures.

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Procedures vs. Objects

- Procedures **control** (third person)
- Objects **behave** (first person)

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Objects Don't Need to be Scary

- Object = Datatype with Properties & Methods
- Properties = characteristics
- Methods = actions

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Properties Describe

- If the object is Jeff:
- Jeff's hair color = brown (mostly)
- Jeff's eye color = brown
- Jeff's family = Peters

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Methods Are Procedures (A Safe Haven for Us)

- Small ("atomic")
- Specific
- Easy to maintain

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Method Example

- Jeff can walk; the **walk()** method might say, “Lean forward. Until you want to stop: put out left foot, put out right foot, repeat.”
- Much easier than a long procedure to control who's walking, where they're going, how fast to go, etc. Objects encourage focus.

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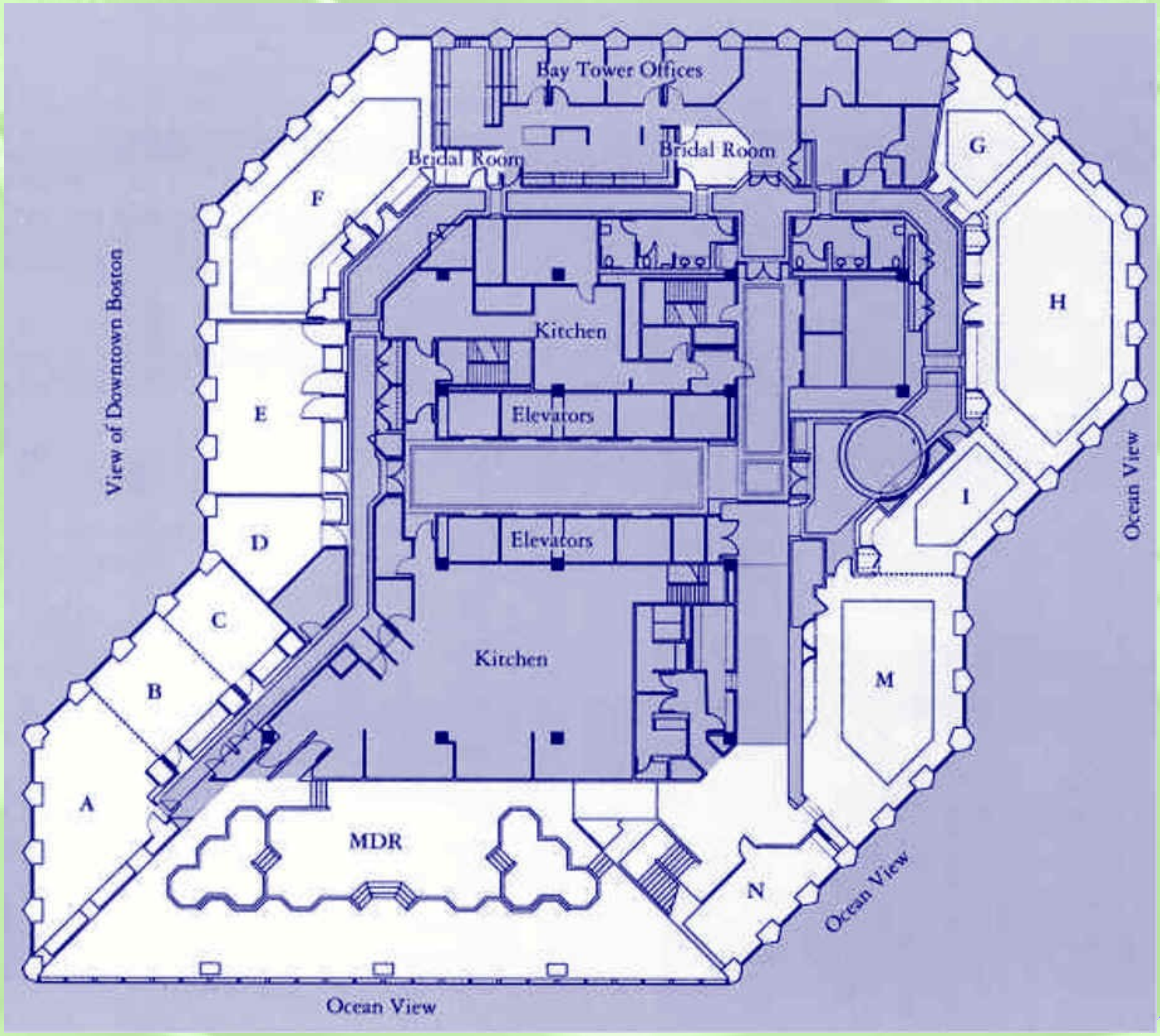
Class = Object Blueprint



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Instance = An Object

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Why Use Objects At All?

- Objects are Scale Models
- Collections of objects model a system
  - School, for example
- Some objects can be pulled out and placed in a different system model without modification.
  - A Person might work at School or Home

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Objects Syntactically

- objectName.property
- objectName.method()

Quick Buzzwords

- **Inheritance** = “I am what my parent is.”
- **Polymorphism** = “I can react differently from other objects that have the same method”
- **Encapsulation** = “You can't make me **have** or **do** anything I don't already have or know how to do.”

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How to Think Objects

- Think in first person perspective
  - (Procedures represent third person POV)
- Think small
  - (Procedural programs tend to be big)
- Think interaction
  - (Procedural programs control instead)

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How to Think Objects
First Person Perspective

Flying a plane is first-person perspective; you only worry about what you can do. Objects should be like this.

"God's eye view" is third-person perspective; you worry about everything in the environment. Objects should NOT be like this.

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How to Think Objects

Think Small

David only worried about one task.
Objects should be like this.

Goliath worried about his armor, helmet, shield, club, being the biggest, controlling the battle, and so on.

Objects should NOT be like this.

How to Think Objects

Think Interaction

Players interact to get work done.
Objects should be like this.

Pointy-Haired Bosses oversee everything.
Objects should NOT be like this.

OUR GOAL IS TO FORCE CUSTOMERS TO FORM SUPPORT GROUPS.
OVER TIME, WITH LUCK, WE'LL TRAIN CUSTOMERS TO DO OUR MANUFACTURING AND SHIPPING, TOO.
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A Quick Example: Procedural

- The procedure does the work
- Data types are passive participants

A Quick Example: Pseudo OO

- The procedure still does the work.
- CFCs are used, but the program isn't written from their orientation.
- Datatypes are still passive participants.

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A Quick Example: OO

- Datatypes are now active participants.
- Main program just establishes objects then asks them to work.
- Datatypes show inheritance, polymorphism, and encapsulation.

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What I'd Like You To Leave With

- No fear of objects!
- Basic terminology
- Proper perspective for OOP

Q&A

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