GOBLIN

Turn-based adventure games

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Problem

- General-purpose languages have steep learning curves and are not focused on game development
- Game engines like Unity require beginners to learn both the environment and new languages
- Not friendly for new coders

What is Goblin?

- Language for simple turn-based games without extensive knowledge of software development
- Follows an abridged object oriented model
- Runs with an underlying game loop

Program Structure

- Gamers think of adventure games in terms of entities in a world that perform functions
- Adapted this model for our program structure

```
world[x,y]{
    ...
}
entities{
    ...
}
functions{
    ...
}
```

Entities

- Classes that represent game characters
- Build block is a constructor
- Does block is a method called every turn of game loop
- Special Player entity that user controls

```
entities{
    <character>:player{
          <fields>
          build{
               <variable declarations>
               <statements>
          }
          does{
               <variable declarations>
               <statements>
          }
    }
}
```

World

- Function that defines and sets up game board
- Instantiates entities by placing at coordinates on the board

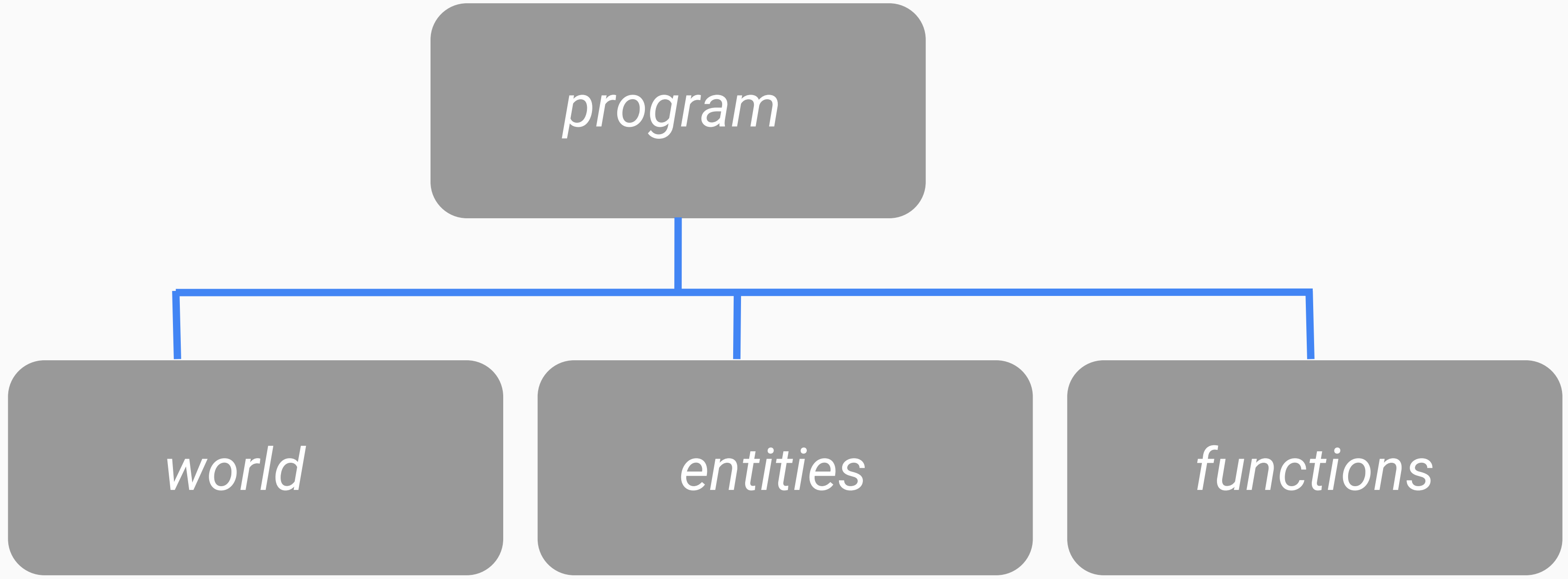
```
world[x,y]{
    <variable declarations>
    <statements>
}
```

Built-in Functions

- place(): instantiate entity on game board
- peek(): returns entity pointer at coordinate
- move(): moves entity to a different coordinate
- remove(): frees entity
- getKey(): returns user input from terminal, written in C
- exit: keyword for quitting on win

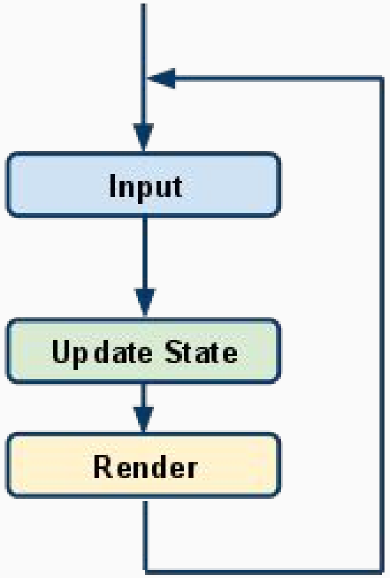
```
place(String e, num r, num c);
peek(num r, num c);

move(Entity e, num r, num c);
remove(Entity e);

row(Entity e);
col(Entity e);

getKey();
exit;
```

Abstract Syntax Tree

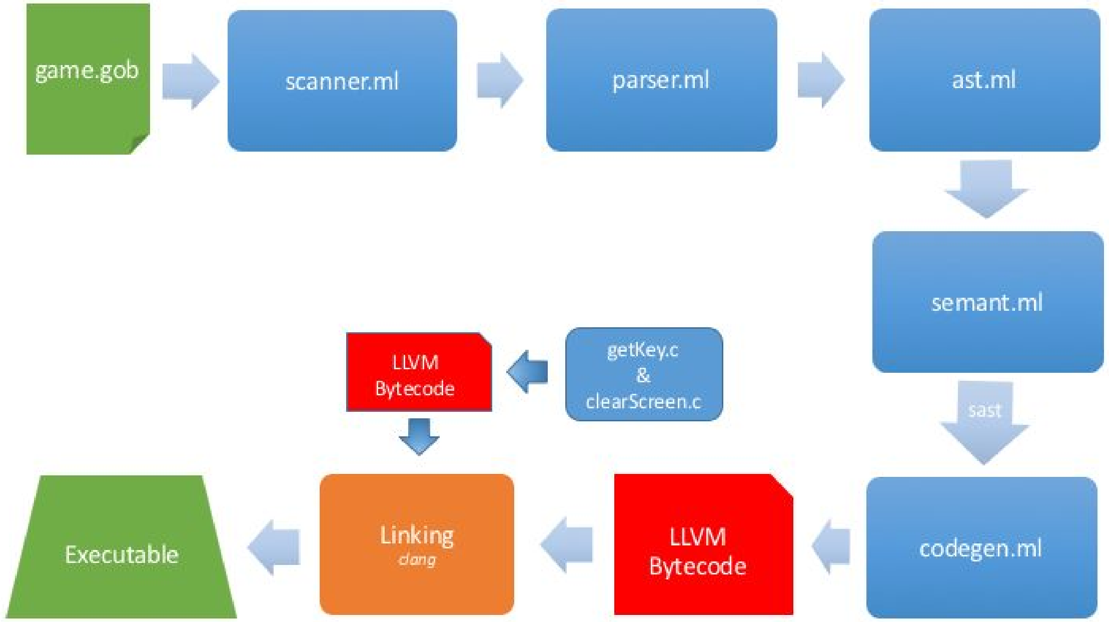


Game Loop

- Abstracted from the Goblin programmer
- main() function that is appended to functions in the AST
- Iterates through World and calls the “does” method for every entity
- Renders World in terminal



Translator Architecture

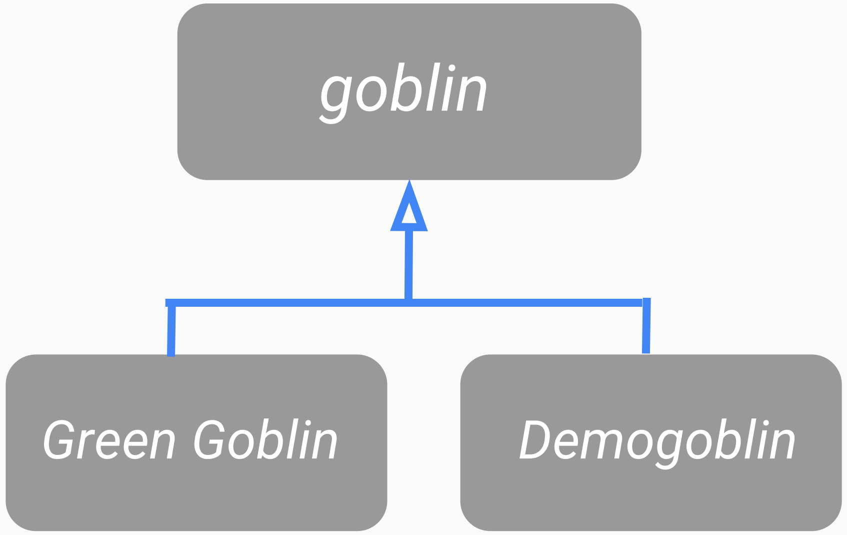


Testing

- Learned that test driven development is important
- Initial complications with testing due to insertion of game loop
- Fixed towards the end

Future

- Inheritance for entities
- Multiple worlds
- Worlds of different shapes



Lessons Learned

- Create a MVP first
- Then iterate agilely on version 1.0
- Be punctual
- And of course, start early

DEMO