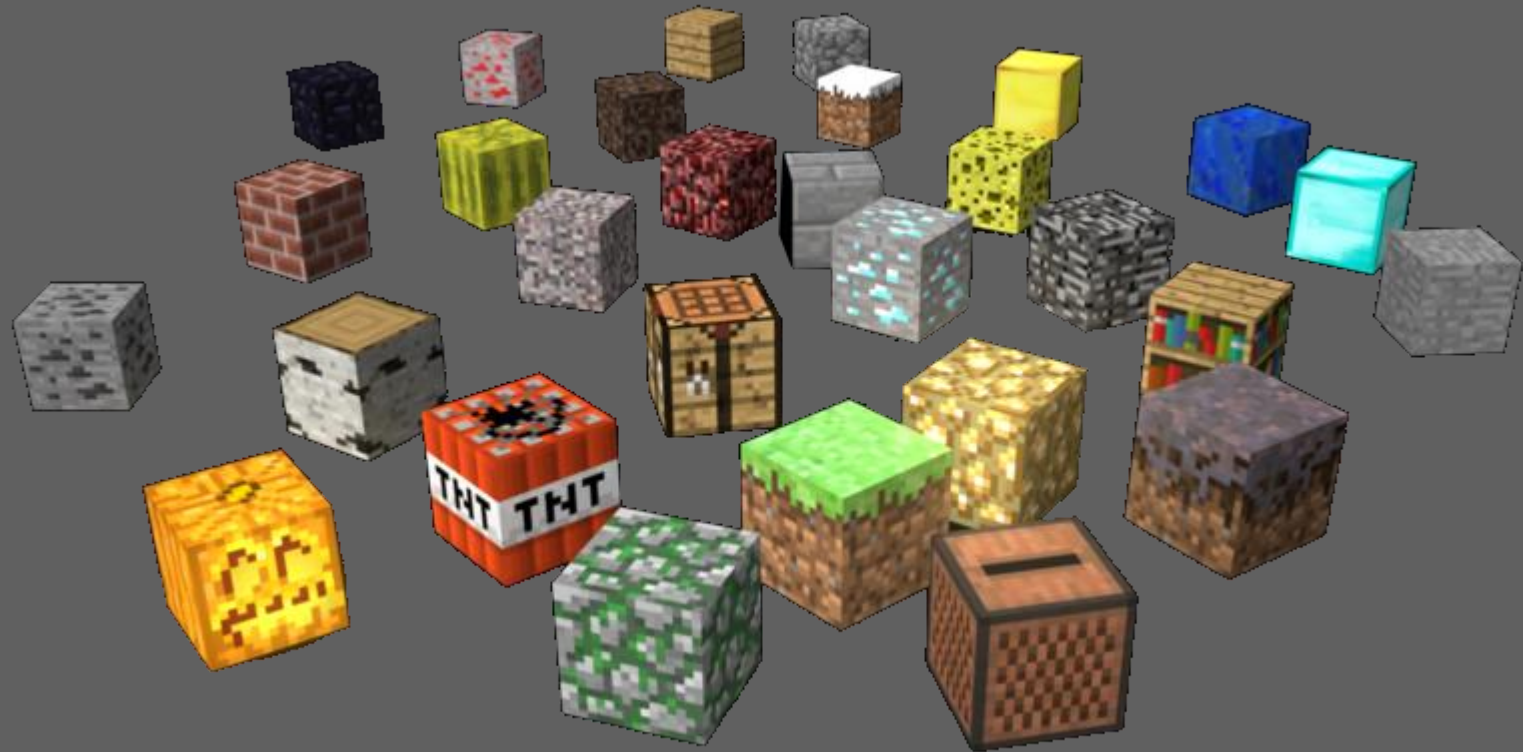


TEALS MINECRAFT PROJECT

Lecture 3: Blocks 1

MINECRAFT BLOCKS



Blocks form the terrain & buildings in the Minecraft world. Blocks can change appearance, trigger actions, spawn other blocks, and perform many other behaviors in game.

MINECRAFT Block OBJECTS

All blocks extend the Minecraft `Block` class.

Blocks are created once, but have methods that are called with parameters `x`, `y` and `z` (the location in the Minecraft world) when something happens to that location.

Block PROPERTIES

Texture(s)

Visible to the user looking at the block.

`parentMod.blockRegistry.newInstance(texture, newBlock, name)`

Material

Determines sounds and other properties.

Defined inside the block constructor.

Blast Resistance

How much resistance to nearby explosions from creepers or TNT.

`setResistance(float level)`, where *level* is a value from 1 to infinity.

Luminance

How much light the block emits.

`setLightLevel(float light)`, where *light* is a level from 0 to 1.

Block PROPERTIES (CONT.)

Hardness

How long it takes to mine the block.

`setHardness(float hardness)`, usually 0 to 5, occasionally higher.

Creative Tab

Location in the creative inventory of the block.

`setCreativeTab(CreativeTabs.someTab)`

Step Sound

The noise the block makes when you walk over it.

`setStepSound(Block.soundTypeSomething)`

BASIC BLOCK TYPES

A big honkin' table of Minecraft block types...

(from Minecraft.gamepedia.com)

| Material ^[n 1] ⇅ | Map color | Liquid? ⇅ | Solid? ^[n 2] ⇅ | Block light? ^[n 3] ⇅ | Block movement? ^[n 4] ⇅ | Opaque? ^[n 5] ⇅ | Need tool? ^[n 6] ⇅ | Can burn? ^[n 7] ⇅ | Can replace? ^[n 8] ⇅ | Piston ^[n 9] ⇅ |
|-----------------------------|-------------|-----------|---------------------------|---------------------------------|------------------------------------|----------------------------|-------------------------------|------------------------------|---------------------------------|---------------------------|
| Air | None | No | No | No | No | No | No | No | Yes | Pushed |
| Grass | 127,178,56 | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| Dirt | 183,106,47 | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| Wood | 104,83,50 | No | Yes | Yes | Yes | Yes | No | Yes | No | Pushed |
| Stone | 112,112,112 | No | Yes | Yes | Yes | Yes | Yes | No | No | Pushed |
| Metal/Mineral | 167,167,167 | No | Yes | Yes | Yes | Yes | Yes | No | No | Pushed |
| Anvil | 167,167,167 | No | Yes | Yes | Yes | Yes | Yes | No | No | Blocked |
| Water | 64,64,255 | Yes | No | Yes | No | No | No | No | Yes | Replace |
| Lava | 255,0,0 | Yes | No | Yes | No | No | No | No | Yes | Replace |
| Leaves | 0,124,0 | No | Yes | Yes | Yes | No | No | Yes | No | Replace |
| Plants | 0,124,0 | No | No | No | No | No | No | No | No | Replace |
| Replaceable plants | 0,124,0 | No | No | No | No | No | No | Yes | Yes | Replace |
| Sponge | 167,167,167 | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| Wool | 167,167,167 | No | Yes | Yes | Yes | Yes | No | Yes | No | Pushed |
| Fire | None | No | No | No | No | No | No | No | Yes | Replace |
| Sand | 247,233,163 | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| Non-solid | None | No | No | No | No | No | No | No | No | Replace |
| Carpet | 167,167,167 | No | No | No | No | No | No | Yes | No | Pushed |
| Glass | None | No | Yes | Yes | Yes | No | No | No | No | Pushed |
| Redstone lamp | None | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| TNT | 255,0,0 | No | Yes | Yes | Yes | No | No | Yes | No | Pushed |
| Unknown ^[n 10] | 0,124,0 | No | Yes | Yes | Yes | Yes | No | No | No | Replace |
| Ice | 160,160,255 | No | Yes | Yes | Yes | No | No | No | No | Pushed |
| Packed ice | 160,160,255 | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| Snow layer | 255,255,255 | No | No | No | No | No | Yes | No | Yes | Replace |
| Snow block | 255,255,255 | No | Yes | Yes | Yes | Yes | Yes | No | No | Pushed |
| Cactus | 0,124,0 | No | Yes | Yes | Yes | No | No | No | No | Replace |
| Clay | 164,168,184 | No | Yes | Yes | Yes | Yes | No | No | No | Pushed |
| Gourd | 0,124,0 | No | Yes | Yes | Yes | Yes | No | No | No | Replace |
| Dragon egg | 0,124,0 | No | Yes | Yes | Yes | Yes | No | No | No | Replace |
| Portal | None | No | No | No | No | No | No | No | No | Blocked |
| Cake | None | No | Yes | Yes | Yes | Yes | No | No | No | Replace |
| Cobweb | 167,167,167 | No | Yes | Yes | No | No | Yes | No | No | Replace |
| Piston | 112,112,112 | No | Yes | Yes | Yes | Yes | No | No | No | Blocked |
| Barrier | None | No | Yes | Yes | Yes | Yes | Yes | No | No | Blocked |

BLOCK EXAMPLE

Block Class

```
package tealsmc.mods;

import net.minecraft.block.Block;
import net.minecraft.block.material.Material;
import net.minecraft.creativetab.CreativeTabs;
import net.minecraft.init.Blocks;
import net.minecraft.world.World;

public class BasicBlock extends Block {

    public BasicBlock (Material material) {
        super (material);           // Pass on material to base class.
        setCreativeTab (CreativeTabs.tabBlock); // Blocks tab.
        setLightLevel (1.0f);      // Very bright.
    }

    public void onBlockAdded (World world, int x, int y, int z) {
        // Whenever this block is placed in world, add a stone block on top of it.
        world.setBlock (x, y+1, z, Blocks.stone);
    }
}
```


BLOCK EXAMPLE

Module Class

```
package tealsmc.mods;

import org.tealsk12.tealsmodloader.module.Module;

public class BlocksModule extends Module {

    // This class registers all custom block types.

    public void onLoad() {
        // Register all custom blocks.
        parentMod.blockRegistry.newInstance (
            "basic_block", new BasicBlock(Material.rock), "Basic");
    }
}
```

LAB 3: CUSTOM BLOCKS

Let's make some blocks!