과목명	콘텐츠프로그래밍(파이썬)
주차명	12주. 참과 거짓, IF문 미니 게임의 엔진
학습목표	- 질문의 대답에 따라 무엇을 할 것인지를 결정하는 프로그래밍을 할 수 있어야 한다. - 비교 연산자(==, !=, >, <)와 논리 연산자(and, or, not)를 사용하여 조건의 True/False를 판단할 수 있어야 한다.

유닛1	참과 거짓	슬라이드1	부울의 기초

- 불록 부수기를 중단하는 코드

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

mc.setting("world_immutable", True)
```

유닛1	참과 거짓	슬라이드2	비교 연산자

- 같다

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

pos = mc.player.getPos()
x = pos.x
y = pos.y
z = pos.z

blockType = mc.getBlock(x, y, z)
mc.postToChat(blockType == 9)
```

- 같지 않다

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

pos = mc.player.getPos()
x = pos.x
y = pos.y
z = pos.z

blockType = mc.getBlock(x, y, z)
notAir = blockType != 0
mc.postToChat("The player is not standing in air: " + str(notAir))
```

- 보다 크다와 보다 작다

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

pos = mc.player.getTilePos()
x = pos.x
y = pos.y
z = pos.z
highestBlockY = mc.getHeight(x, z)
aboveGround = y >= highestBlockY
mc.postToChat("The player is above ground: " + str(aboveGround))
```

- 보다 크거나 보다 작거나 같다

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

import math

homeX = 10
homeZ = 10
pos = mc.player.getTilePos()
x = pos.x
z = pos.z
distance = math.sqrt((homeX - x) ** 2 + (homeZ - z) ** 2)
far = distance <= 40
mc.postToChat("Your house is nearby: " + str(far))
```

유닛1	참과 거짓	슬라이드3	논리 연산자

- not

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

x = 10
y = 11
z = 12
melon = 103
block = mc.getBlock(x, y, z)

noMelon = not block == melon

mc.postToChat("You need to get some food: " + str(noMelon))
```

- 논리연산자의 연산 순서

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

buildX = 10
buildY = 11
buildZ = 12
width = 10
height = 5
length = 6

pos = mc.player.getTilePos()
x = pos.x
y = pos.y
z = pos.z

inside = buildX < x < buildX + width and buildY < y < buildY + height and buildZ < z < buildZ
+ length
mc.postToChat("The player is at home: " + str(inside))
```

유닛2	IF문 미니 게임의 엔진	슬라이드1	IF문 사용하기

- if문

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()
answer = input("Create a crater? Y/N ")

if answer == "Y":
    pos = mc.player.getPos()
    mc.setBlocks(pos.x + 1, pos.y + 1, pos.z + 1, pos.x - 1, pos.y - 1, pos.z - 1, 0)
    mc.postToChat("Boom!")
```

- elif문

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()
x = 10
y = 11
z = 12
gift = mc.getBlock(x, y, z)

# if gift is a diamond block
if gift == 57:
    mc.postToChat("Thanks for the diamond.")
# else if gift is a sapling
elif gift == 6:
    mc.postToChat("I guess tree saplings are as good as diamonds...")
else:
    mc.postToChat("Bring a gift to " + str(x) + ", " + str(y) + ", " + str(z))
```

- elif문 연결하기

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()



points = int(input("Enter your points: "))
if points > 6:
    mc.player.setPos(32, 18, -38)
elif points > 4:
    mc.player.setPos(60, 20, 32)
elif points > 2:
    mc.player.setPos(112, 10, 112)
elif points <= 2:
    mc.player.setPos(0, 12, 20)
else:
    mc.postToChat("I don't know what to do with that information.")
```

- 중첩된 if문

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

valid = True

x = int(input("Enter x: "))
y = int(input("Enter y: "))
z = int(input("Enter z: "))

if not -127 < x < 127:
    valid = False
# check if y is not between -63 and 63
if not -63 < y < 63:
    valid = False
# check if z is not between -127 and 127
if not -127 < z < 127:
    valid = False

if valid:
    mc.player.setPos(x, y, z)
else:
    mc.postToChat("Please enter a valid location")
```

유닛2	IF문 미니 게임의 엔진	슬라이드2	부울 연산자와 if문

- 부울 연산자와 if문

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

shwrX = -14
shwrY = 74
shwrZ = 518

width = 5
height = 5
length = 5

pos = mc.player.getTilePos()
x = pos.x
y = pos.y
z = pos.z

if shwrX <= x < shwrX + width and shwrY <= y < shwrY + height and shwrZ <= z < shwrZ + length:
    mc.setBlocks(shwrX, shwrY + height, shwrZ,
                 shwrX + width, shwrY + height, shwrZ + length, 8)
else:
    mc.setBlocks(shwrX, shwrY, shwrZ,
                 shwrX + width, shwrY + height, shwrZ + length, 0)
```