

# Adding Nodes

***At this point, we have a fixed map of nodes along with our regular mouthless Pacman. He does not yet have any connection to the nodes. They're a part of the background at this point.***

## Run.py

```
import pygame
from pygame.locals import *
from constants import *
from pacman import Pacman
from nodes import NodeGroup

class GameController(object):
    def __init__(self):
        pygame.init()
        self.screen = pygame.display.set_mode(SCREENSIZE, 0, 32)
        self.background = None
        self.clock = pygame.time.Clock()

    def setBackground(self):
        self.background = pygame.surface.Surface(SCREENSIZE).convert()
        self.background.fill(BLACK)

    def startGame(self):
        self.setBackground()
        self.nodes = NodeGroup()
        self.nodes.setupTestNodes()
        self.pacman = Pacman()

    def update(self):
        dt = self.clock.tick(30) / 1000.0
        self.pacman.update(dt)
        self.checkEvents()
        self.render()

    def checkEvents(self):
        for event in pygame.event.get():
            if event.type == QUIT:
                exit()

    def render(self):
        self.screen.blit(self.background, (0,0))
        self.nodes.render(self.screen)
        self.pacman.render(self.screen)
        pygame.display.update()
```

```

if __name__ == "__main__":
    game = GameController()
    game.startGame()
    while True:
        game.update()

```

## Nodes.py

```

import pygame
from vector import Vector2
from constants import *

class Node(object):
    def __init__(self, x, y):
        self.position = Vector2(x, y)
        self.neighbors = {UP:None, DOWN:None, LEFT:None, RIGHT:None}

    def render(self, screen):
        for n in self.neighbors.keys():
            if self.neighbors[n] is not None:
                line_start = self.position.asTuple()
                line_end = self.neighbors[n].position.asTuple()
                pygame.draw.line(screen, WHITE, line_start, line_end, 4)
                pygame.draw.circle(screen, RED, self.position.asInt(), 12)

class NodeGroup(object):
    def __init__(self,):
        self.nodeList = []

    def setupTestNodes(self):
        nodeA = Node(80,80)
        nodeB = Node(160, 80)
        nodeC = Node(80, 160)
        nodeD = Node(160, 160)
        nodeE = Node(208, 160)
        nodeF = Node(80, 320)
        nodeG = Node(208, 320)
        nodeA.neighbors[RIGHT] = nodeB
        nodeA.neighbors[DOWN] = nodeC
        nodeB.neighbors[LEFT] = nodeA
        nodeB.neighbors[DOWN] = nodeD
        nodeC.neighbors[UP] = nodeA
        nodeC.neighbors[RIGHT] = nodeD
        nodeC.neighbors[DOWN] = nodeF
        nodeD.neighbors[UP] = nodeB
        nodeD.neighbors[LEFT] = nodeC
        nodeD.neighbors[RIGHT] = nodeE
        nodeE.neighbors[LEFT] = nodeD
        nodeE.neighbors[DOWN] = nodeG

```

```
nodeF.neighbors[UP] = nodeC
nodeF.neighbors[RIGHT] = nodeG
nodeG.neighbors[UP] = nodeE
nodeG.neighbors[LEFT] = nodeF
self.nodeList = [nodeA, nodeB, nodeC, nodeD, nodeE, nodeF, nodeG]

def render(self, screen):
    for node in self.nodeList:
        node.render(screen)
```