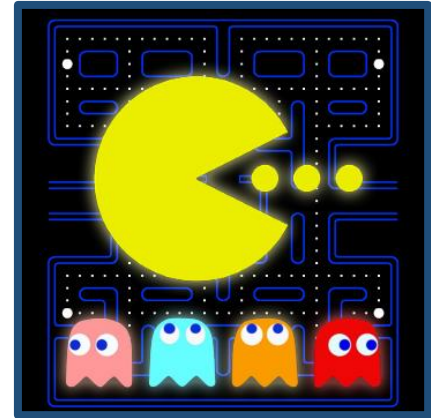


# ADVANCED TOOLS AND TECHNIQUES: PAC-MAN GAME

For your next assignment you are going to create Pac-Man, the classic arcade game.

The game play should be similar to the original game whereby the player controls Pac-Man through a maze while collecting (eating) pellets. Once all the pellets are eaten, Pac-Man should be taken to the next level. You will need a minimum of two levels for this game.



## ENEMIES

Your game will require four (4) enemies that roam the maze trying to catch Pac-Man. You will need to use a Step Event and the Step Towards action in order to make the enemies somewhat intelligent so that they follow Pac-Man. If an enemy touches Pac-Man, a life is lost and Pac-Man dies. When all lives have been lost, the game ends.

## POWER PELLETS

Your game will need to include power pellets, which are four, larger flashing dots near the four corners of the maze. When Pac-Man eats a power pellet, it gains the temporary ability to eat the enemies. The enemies must turn deep blue, run away from Pac-Man and move slower. When an enemy is eaten, its eyes must be the only things that remain visible and must return to the centre box where it is regenerated back to its normal colour. Blue enemies must also flash white to signal that they are about to become dangerous again.

## FRUITS

You will need to have fruits appear directly below the ghost pen. The first bonus fruit appears after 70 dots have been cleared from the maze; the second one appears after 170 dots are cleared. Each fruit is worth a different amount of points:



**100 points**



**300 points**



**500 points**



**700 points**



**1000 points**

Whenever a fruit appears, the amount of time it stays on the screen before disappearing should be 10 seconds.

## SCORING

The player can earn points in a variety of ways. Each small pellet that Pac-Man eats earns the player 10 points. Each power pellet is worth 50 points each. As for the ghosts, the first ghost captured after a power pellet is eaten is worth 200 points. Each additional ghost captured from the same power pellet is worth twice as many points as the one before it – i.e. 400, 800, and 1,600 points.

## HIGH SCORES

Be sure to include a High Scores table that allows the user to record their name and score if they earn a Top 10 score.

## SOUNDS

Finally, you will need to include sound effects and background music for your game. I have included sound files for you which you can find in the shared directory. You are more than welcome to find and use your other sound effects.

## GAME DESIGN OUTLINE

In addition to creating the game, you will also need to come up with an outline of your game. Your outline should include a brief description of the game that walks us through the main points and objective of the game.

For your game design outline, you will need to use the following Game Design template:

# Game Title

## SUMMARY

Provide a brief description of the game, including the objective of the game, the gameplay (i.e. how the game works), characters in the game, the scene(s) in which the action takes place, etc.)

## GAME OBJECTS

Describe the objects that you will be using, what these objects will look like, and the purpose these objects will serve in the game.

## SOUNDS

Describe the sounds (and sound effects) you will be using and the purpose the sounds will serve in the game.

## CONTROLS

Explain what the user will be using to control the objects in the game (e.g. left mouse button, a key on the keyboard, etc.).

## GAME FLOW

Describe how the game works, from beginning to end. In other words, describe what happens when the game begins, what the user's options are, what the other objects in the game do, what happens when the user performs certain actions, etc.

## LEVELS

If there is more than one level, describe each level. Even if there is only one level, describe how the difficulty of the game increases as the game progresses.

Be sure to save your project, as well as your Game Design outline, in a folder called **Pac-Man** in your COMPLETED ASSIGNMENTS folder.

## ADVANCED TOOLS AND TECHNIQUES: PAC-MAN GAME

CATEGORY	CRITERIA	< LEVEL 1 0 – 49%	LEVEL 1 50 – 59%	LEVEL 2 60 – 69%	LEVEL 3 70 – 79%	LEVEL 4 80 – 100%	MARK
<b>Knowledge and Understanding</b>	Demonstrates an understanding of how to create a game using some of GameMaker’s advanced tools and techniques	<ul style="list-style-type: none"> <li>Demonstrates no understanding of how to create a game using GameMaker’s advanced tools and techniques</li> </ul> <p style="text-align: center;"><b>0-4.9</b></p>	<ul style="list-style-type: none"> <li>Demonstrates limited understanding of how to create a game using GameMaker’s advanced tools and techniques</li> </ul> <p style="text-align: center;"><b>5.0-5.9</b></p>	<ul style="list-style-type: none"> <li>Demonstrates some understanding of how to create a game using GameMaker’s advanced tools and techniques</li> </ul> <p style="text-align: center;"><b>6.0-6.9</b></p>	<ul style="list-style-type: none"> <li>Demonstrates considerable understanding of how to create a game using GameMaker’s advanced tools and techniques</li> </ul> <p style="text-align: center;"><b>7.0-7.9</b></p>	<ul style="list-style-type: none"> <li>Demonstrates thorough understanding of how to create a game using GameMaker’s advanced tools and techniques</li> </ul> <p style="text-align: center;"><b>8.0-10</b></p>	<b>/10</b>
<b>Thinking</b>	<p>The game meets all the outlined requirements</p> <p>Tests and debugs the game to ensure the program meets all the requirements</p>	<ul style="list-style-type: none"> <li>The game meets none of the outlined requirements</li> <li>Tests and debugs the program with no success</li> </ul> <p style="text-align: center;"><b>0-4.9</b></p>	<ul style="list-style-type: none"> <li>The game meets a limited number of the outlined requirements</li> <li>Tests and debugs the program with limited success</li> </ul> <p style="text-align: center;"><b>5.0-5.9</b></p>	<ul style="list-style-type: none"> <li>The game meets some of the outlined requirements</li> <li>Tests and debugs the program with some success</li> </ul> <p style="text-align: center;"><b>6.0-6.9</b></p>	<ul style="list-style-type: none"> <li>The game meets most of the outlined requirements</li> <li>Tests and debugs the program with considerable success</li> </ul> <p style="text-align: center;"><b>7.0-7.9</b></p>	<ul style="list-style-type: none"> <li>The game meets all of the outlined requirements</li> <li>Tests and debugs the program with great success</li> </ul> <p style="text-align: center;"><b>8.0-10</b></p>	<b>/10</b>
<b>Communication</b>	Provides a game design outline that clearly describes the key features and objective of the game	<ul style="list-style-type: none"> <li>Communicates the key features and objectives of the game with no success</li> </ul> <p style="text-align: center;"><b>0-4.9</b></p>	<ul style="list-style-type: none"> <li>Communicates the key features and objectives of the game with limited success</li> </ul> <p style="text-align: center;"><b>5.0-5.9</b></p>	<ul style="list-style-type: none"> <li>Communicates the key features and objectives of the game with some success</li> </ul> <p style="text-align: center;"><b>6.0-6.9</b></p>	<ul style="list-style-type: none"> <li>Communicates the key features and objectives of the game with considerable success</li> </ul> <p style="text-align: center;"><b>7.0-7.9</b></p>	<ul style="list-style-type: none"> <li>Communicates the key features and objectives of the game with great success</li> </ul> <p style="text-align: center;"><b>8.0-10</b></p>	<b>/10</b>
<b>Application</b>	Effectively applies programming knowledge and skills of GameMaker to create a game	<ul style="list-style-type: none"> <li>Applies programming knowledge and skills of GameMaker with no success</li> </ul> <p style="text-align: center;"><b>0-4.9</b></p>	<ul style="list-style-type: none"> <li>Applies programming knowledge and skills of GameMaker with limited success</li> </ul> <p style="text-align: center;"><b>5.0-5.9</b></p>	<ul style="list-style-type: none"> <li>Applies programming knowledge and skills of GameMaker with some success</li> </ul> <p style="text-align: center;"><b>6.0-6.9</b></p>	<ul style="list-style-type: none"> <li>Applies programming knowledge and skills of GameMaker with considerable success</li> </ul> <p style="text-align: center;"><b>7.0-7.9</b></p>	<ul style="list-style-type: none"> <li>Applies programming knowledge and skills of GameMaker with great success</li> </ul> <p style="text-align: center;"><b>8.0-10</b></p>	<b>/10</b>

### CURRICULUM EXPECTATIONS THAT ARE COVERED IN THIS ASSIGNMENT:

- B1. Describe fundamental programming concepts and constructs.
- B2. Plan and write simple programs using fundamental programming concepts.
- B3. Apply basic code maintenance techniques when writing programs.

