**Design of Pac-Man Introduction:**

This game has been designed to include the components and techniques dealing with the software side. Our version of Pac-man will be partially implemented with third party software; however, the graphics display of the game as well as most of the game state/controls will be entirely made by our team. The game engine portion of our project will be coded in C.

**Game Description:**

Our version of Pac-Man will have several modifications to the original game. Enemy units will be configured to attack and defend human players. Our game is based upon a point system. In a one-person game, if the player gobbles up a designated number of pellets in the game, then the player wins. Our game will host a maximum of two human players competing head to head. When the game is in two player mode, a win condition is given to the highest scoring human player, regardless of AI effect. Additionally, our game state will contain “Magic Pellets” which will offer players special powers such as attack capability, invincibility, wall smashing…etc.

**Software/Game Engine:**

The software side of the project is coded in C. The game engine will store the information of the game map along with the states of the player and enemy units. The game engine is divided into the following major components.

**Game Controls:**

Our keyboard controls will be limited to 10 buttons. The input method is via keyboard through MINICOM to UART, and finally to our character buffer in xuartlite.c. Originally we were going to set the control as the up, down, left, and right buttons . However, during game development it was found that this set of controls is extremely awkward for two player games (players kept getting into each other’s way).

Our current buttons map to the following pattern:

o->player1 up

l ->player1 down

k->player1 left

;->player1 right

p->player1 pause

w->player2 up

s->player2 down

a->player2 left

d->player 2 right

q->player 2 pause

**Game Customization:**

Our game is highly customizable. We included a set of parameter macros that allows users to manipulate game aspects such as #humans, #AI, Scoring/Win Condition, and keyboard controls without knowing anything about the coding of the game.

The following macros are listed:

#define WIN\_SCORE 500 //eat 500 pellets to win, entering 0 will access default win condition

#define PLAYER\_COUNT 2 // two player game, can be either 1 or 2

#define AI\_COUNT 5 //5 AI’s within the game, can be from 1 to 5

#define P1UP 128 //selects ascii value of a character button to be the up button for player 1

#define P1DOWN 127 //control buttons can be any letter or number on the keyboard

#define P1LEFT 126 // But the control buttons of different players has to be different

#define P1RIGHT 125

#define P2UP 124

#define P2DOWN 123

#define P2LEFT 122

#define P2RIGHT 121