**Document of Space SHUMP Game**

**Requirements**

Power-ups

* Two different types of power-ups.
* Each power-ups should have different functions.
* Power-ups dropped by the enemies occasionally when they are destroyed.
* Collecting a certain number of power-ups should gain access to special activity or weapon

Level Progression

* Add at least one level that has a new functionality not included at level-1.

At least two of the following features should be implemented

* Some enemies are able to shoot and destroy the ship.
* A weapon that explodes and destroys all enemies on the screen.
* A weapon that always shoots towards the closest enemy.
* A free-to-choose feature with at least the same complexity as the previous three.

**Performance**

Power-ups

* Type “Undamaged”: After the ship collects three power-ups which have letter “U”, the ship will take no damage from enemy bullets or enemy collision for ten seconds. At the bottom of the screen, the text “No Damage” will display.
* Type “Nuke”: After the ship collects power-ups which have letter “N”, the ship will be able to destroy all enemies on screen by releasing the nuke weapon. The text named “Bombs” will increase by one per “Nuke” power-up collected and obtain one more chance to use the nuke. If the player wants to use this special weapon, player should press the key “E” to switch and “Space” to fire it; at the same time, the “Bombs” count will decrease by one. After player release the “nuke”, the weapon will be automatically switched back to original weapon.
* Shield: After the ship collects the power-ups which is white in colour and has no letter embedded, the shield around the ship will increases its strength by one. The shield can be strengthened up to five layers by collecting power-ups.

Weapon

* Missile weapon type: Find the closest enemy and shoot towards it. It has shorter delay between shoots and faster bullet speed compares to other weapon types.

**Enemies Design**

* Enemy\_1: Enemy\_1 moves at a 45 degrees angle while moving down. It will reverse direction when Enemy\_1 touches the boundaries of the screen. Enemy\_1 shoots straight down every 1.5 seconds.
* Enemy\_2: Enemy\_2 moves straight down and rotates with Sine function on its horizontal axis. Enmey\_2 shoots three bullets with a spread weapon. One of them goes straight down, and the other two has 30 degrees on its vertical axis.
* Enemy\_3: Enemy\_3 moves straight down for 3 seconds, then shoot a bullet towards player’s direction, and goes up with two times original speed. The firing will be invoked every 2.5 seconds.
* Enemy\_4: Enemy\_4 will only appear in level-2 once as a boss level. Enmey\_4 has two types of weapon: the first type shoots 10 bullets straight down and each of them are separated horizontally by a certain distance; the second type shoots 10 bullets towards hero’s ship direction. The firing function will be invoked every 1.5 seconds and determine the weapon type randomly. After Eneny\_4 is destroyed, the text “Enemy defeated” will be displayed on screen. The game will exit after two seconds.

* All enemies drop the power-ups randomly based on assigned probability.

**Levels**

* Level-1: In the first level, player will face 4 different enemies, players destroy them and collect the power-ups to change the weapon, increase their power, and receive the score by shooting down enemies. After score reaches 1200, player will enter level-2.
* Level-2 act as a boss level. It will spawn a special enemy type which has bigger size, higher resilience and more powerful weapons to counter hero.

**Energy Bar**

* The energy bar at the left bottom corner is used to record the number of “undamaged” power-ups collected. Once the energy bar is filled, hero will activate the special activity of no taking damage from enemies for 10 seconds.

Meanwhile, the message “No Damage” will display at the bottom of the screen.

**NB**: The next page contains a UML diagram demonstrated the structure of the program.

