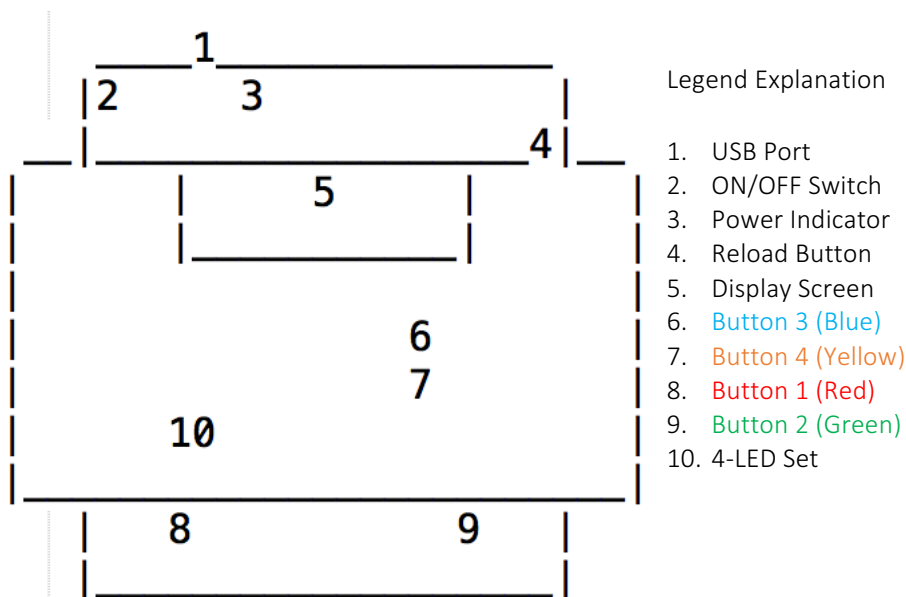# SE 101 Lab Project Manual

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➢ **Project Name: TAT PlayStation**

TAT PlayStation is a game console built on Tiva C Microcontroller and Orbit Booster Pack. It includes several games which supports both single-player mode or multi-player mode. Games currently implemented on the PlayStation are Whac-A-Mole, Star Trek, and CS Game.

➢ **Game Console Configuration**

Legend Explanation

1. USB Port
2. ON/OFF Switch
3. Power Indicator
4. Reload Button
5. Display Screen
6. Button 3 (Blue)
7. Button 4 (Yellow)
8. Button 1 (Red)
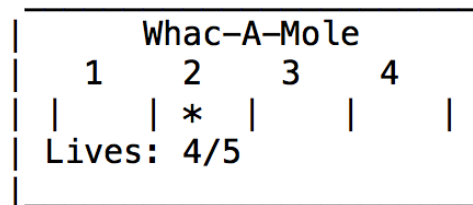9. Button 2 (Green)
10. 4-LED Set

➢ **Step-by-step Playing Guidance**

1. Connect the PlayStation with power using the USB cable and waiting for loading.

2. Using the Button 3 (up) and Button 4 (down) to select a game mode.

3. Press the Button 2 to enter the selected game.

4. Wait for the countdown and start playing the game:

| Whac-A-Mole (Single player):

There are 4 holes in total. The mole will jump out of the hole randomly once a time. The player must press the respective button to hit the mole before it disappears. During each game, the player has 5 chances of making mistakes in total. Making mistakes means that the player does not hit in time or hit in the wrong position. Once the player uses up 5 chances, the game is over and the score will be displayed.

```
 _____
|        Whac-A-Mole        |
|    1     2     3     4     |
| |     | * |     |     |    |
| Lives: 4/5                |
|_____|
```
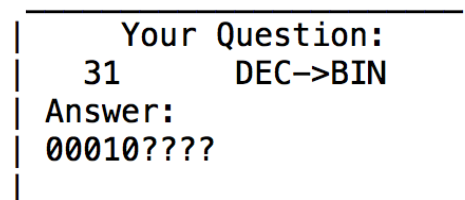
1. When the mole appears on the screen, press the respective button (Button 1/2/3/4) to hit it.

2. Hit the moles until using up all lives.

3. Check total score and press any button to exit.

| CS (Converting System) Game (Single / Multi player):

The screen displays a decimal number; the player is expected to convert it in the form of binary number. The player should input the binary number and the system will evaluate whether the input is correct.

```
 _____
|      Your Question:       |
|   31         DEC->BIN     |
| Answer:                   |
| 00010????                 |
|_____|
```
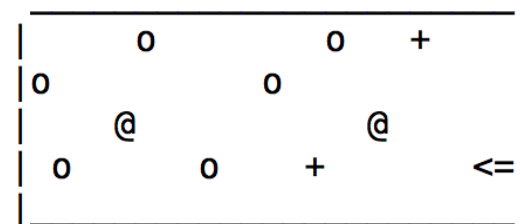
1. Select number of players and levels using Button 3 and Button 4, confirm using Button 2.

2. Convert the decimal number and press Button 3 (for 0) and Button 4 (for 1) to input. Unused digits should be zeros. Press Button 1 to delete.

3. Check scores/winner. Press any button to exit.

| Star Trek (Single player):

The player drives a spaceship in the universe. The player must constantly adjust the spaceship's position (left or right) to prevent it from colliding with the dangerous asteroids in the way. The players have 4 lives in total, and the current lives is indicated by the 4-LED set. There are 2 kinds of asteroids, one denoted as "o" (reduces 2 lives) and the other denoted as "@" (reduces 3 lives). If the player has less than 4 lives, it can gain one more life if received "+" aid package. As the game proceeds, the asteroids will be falling faster and faster.

```
 _____
|      o          o      +      |
|o                 o            |
|    @              @           |
|  o        o      +        <=  |
|_____|
```

1. Steer the spaceship at the bottom of the screen using Button 3 and Button 4 to dodge asteroids until all lives are run out. Try to receive "+" aid package if additional life is needed.

2. Check total score on the screen.