# Bombermen Duel

# Project Proposal

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**1. Design Overview**

For the final project, our group hopes to implement the classic bomberman game based on the SoCKit platform and Linux system. The Bombermen Duel will be a two-player game where each player's goal is to defeat the other player through placing bombs on the map. As shown in the picture below, the screen will consist of the two players, bombs, destroyable and non-destroyable obstacles, special items, and the stationary background. The players will control the characters by either sharing the same keyboard or from two separate keyboards. The hardware used in this project will include VGA display, keyboard(s), memory, and audio device. The Avalon Bus will be used as the interface between hardware and software.

Figure 1. From www.retrogamer.net

**2. Game Rules**

At the start of the game, the players will be born at the opposite sides of the screen, with numerous randomly-generated destroyable and non-destroyable obstacles created between them. The players will be capable of placing bombs that will detonate after a fixed amount of time, getting rid of the destroyable obstacles and killing any players that are within the bombing distance. The bombs do not distinguish players, meaning a bomb can also kill the player who placed this bomb. If one player is killed then the surviving player wins. If both players are killed together, it will be a draw game. When a game is finished, the players are reborn at the starting place with a brand new map.

To make the game more interesting, special items are hidden in destroyable obstacles and can be consumed by the players. The special items can be beneficial or detrimental, temporary or permanent for the duration of the game. Below is a list of items that we may implement:

Beneficial items:

- Increasing bomb blast distance (permanent)
- Increasing the maximum number of bombs placed (permanent)
- Increasing player speed (permanent)
- Placing ultra bombs that has whole-screen blast distance (temporary)
- Immunity against bombs (temporary)

Detrimental items:

- Decreasing player speed (temporary)
- Decreasing bomb blast distance (temporary)
- Reverse the direction control (temporary)

**3. Hardware**

- Keyboard
- VGA display
- Memory
- Sound chip driver

**4. Software**

- Game rule implementation
- Player movement and collision detection
- Player attributes due to special items
- Random placement of obstacles and special items to create map
- Action sound effects

**5. Milestones**

Milestone 1

- Set up keyboard(s) and support two-player inputs
- Design game rule
- Display basic graphics on VGA and control graphic location through keyboard(s)

Milestone 2

- Implement game rule
- Implement algorithm for generating maps
- Implement player control algorithm

Milestone 3

- Improve user interface and graphics
- Include sound effects
- Integrate all components completed in milestone 2
- Test functionality of entire system