**Single player mode**

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| **Class** | **Mario** | |
| **Properties** | (x, y)  Initially shows up on bottom left corner | Mario’s current position |
| State  (normal, weapon, running, facing)  =  (0, 0, 0) | Mario’s state  normal = 0 normal Mario  normal = 1 big Mario  weapon = 0 no fireball  weapon = 1 able to shoot fireball  running = 0 walking  running = 1 running  facing = 0 facing right  facing = 1 facing left |
| HP = 5 | When hit by a monster, HP – 1  After eating a life mushroom, HP + 1 |
|  | Speed | Mario’s moving speed  Speed is larger when running |
|  | Color | Two options depending on state normal |
|  |  |  |
| **How to**  **control Mario** | **Key** |  |
|  | Left arrow  (Hold this key down for running) | facing = 0  Mario.x -= speed |
|  | Right arrow  (Hold this key down for running) | facing = 1  Mario.x += speed |
|  | Up arrow | Jump  1. can make 2nd and even more jumps while in the air  2. jump direction depends on facing |
|  | Spacekey | Shoot fireball |
|  | Enter | Enter tube or door |
|  | “P” | Pick up item in the game |
|  | “I” | Throw an item |
|  | **Mouse** |  |
|  | Mouse right button | Jump right, forward direction (alternative way) |
|  | Mouse left button | Jump left, backward direction (alternative way) |
|  |  |  |
| **Methods** | **Potential options** |  |
|  | Move() |  |
|  | Draw() |  |
|  | UpdateState() |  |
|  | CheckCollision() |  |
|  | Climb() | At the end of the game when Mario wins |

**Double player mode (possible work when single player is done)**

Have same properties and methods but two sperate ways to control each one

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| --- | --- | --- |
| How to  control player | Key |  |
| Player 1 | Left arrow  (Hold this key down for running) | player.x -= speed |
|  | Right arrow  (Hold this key down for running) | player.x += speed |
|  | Up arrow | Jump |
|  | ‘9’ | Shoot fireball |
|  | Down arrow | Enter tube or door |
|  | ‘0’ | Pick up item in the game |
|  | ‘-‘ | Throw an item |
| Player 2 | ‘D’  (Hold this key down for running) | player.x -= speed |
|  | ‘G’ | player.x += speed |
|  | ‘R’  (Hold this key down for running) | Jump |
|  | ‘`’ | Shoot fireball |
|  | ‘F’ | Enter tube or door |
|  | ‘1’ | Pick up item in the game |
|  | ‘2’ | Throw an item |