Simple RPG

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1 Getting Started

Create a new project called 'SimpleRPG'

Using the *Unity Hub*,

- Select **2D** project.

- create a new project in your Home directory.

- Call this new project 'SimpleRPG'.

It this does not happen automatically, launch the project.

Rather than starting the project entirely from scratch a few assets have been prepared for you.
They will need some careful setup.

Importing packages

Assets are a convenient way to store and disseminate Unity assets.
Packages can be imported using the main menu=>Assets=>Import Package=>Custom Package.
Unity will give you an option to select which files to import. Import all the files.

- Download the .unitypackage file from blackboard.

- Import PiratePackage.unitypackage.

2 Tilemap

A Tilemap is a convenient way of producing a game level from many repeated smaller image, or tiles. It works in a similar way to patterned tiles in a bathroom. The tiles are laid out in a rectangular grid, each rectangular tile exactly touching its neighbour. Each tile has a pattern chosen from a **palette** of tiles. The level is produced from many of these tiles placed together.
In old games every tile was placed on the same map. However in modern games tile are often placed in different maps depending on function. Background tiles are usually placed on their own tilemap behind all the other tilemaps. The main level, that is the walkable platforms are on their own tilemap. Moveables, i.e. the main character antagonists etc. are typically separate game objects and not rendered using the tilemap system.

Create a tile map.

We are going to state by creating the platform tilemap. That is the platform for the player to walk on.
In the hierarchy window, right click, select 2D Object=>Tilemap.
A tilemap and grid should be created.

Before we can place tiles we need to create a tile palette.

Create a tile palette

In the top menu select, Window=>2D=>Tile Palette.
In the Tile Palette window that appears, select 'Create New Palette'
Our tiles are rectangular so under 'grid' select 'rectangular'.
Give your tile palette a name.
Click create, and create a new folder inside your asset folder.

Now we need some tiles for our tile palette.
Each tile is an identically sized bitmap image. Often these come in tile-sheets, that is a single image with all of the tiles arranged side by side in a grid pattern.
We need to take one of these images and get the individual tiles.

Many little tiles.

In the directory 'Assets=>Pirate Bomb=>Sprites=>8-Tile-Sets is a file called 'Tile-Sets (64-64).png'. Select it and go to the Inspector window.
Our tile set is 64 by 64 pixels in size so set the 'Pixels Per Unit' to 64.
We need to tell Unity that our image has many sprites.
Find the 'Sprite Mode' combo box and set it to 'Multiple'.
We need to tell Unity where one tile end and another begins. Select the 'Sprite Editor' button.
In the Sprite editor window select 'Slice' (near the top).
We know our tile size, so under 'Type' select 'Grid by Cell Size'
Our tiles are 64 x 64 so put 64 in both X and Y values of 'Pixel Size'. Click 'Slice'
Now click 'Apply'
Close the window.

Placing tiles in the tile palette

Now we need to put some tiles in our palette.
In the directory 'Assets=>Pirate Bomb=>Sprites=>8-Tile-Sets is a file called 'Tile-Sets (64-64).png' drag it into the Tile Palette window, the tiles should automatically appear.

We can now paint the level onto the Tilemap. We do this using the Tile Palette to select tiles and the main Scene view to paint them. The Tile Palette has a number of icons that resemble a standard paint program. These include a brush for painting tiles and an eraser for removing them.

Paint your map

You can select a tile in the Tile Palette by clicking on it.
Click on the paint brush icon in the Tile Palette window.
Click anywhere in the Scene window to draw the tile onto the tile map.

3   The Character Controller Bomber component.

The PiratePackage contains a pre-made Character Prefab called 1-Player. This Prefab contains a single animated character of a pirate with a bomb on its back. The Prefab already has an Animation Controller, a character controller, Rigidbody and Collider components attached. It should be ready to go.

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rag the Prefab 1-Player into your scene.
It can be found under Assets=>Pirate Bomb in the Project window.

All fall down

If you hit run now the Prefab character should simply fall down the display.
We need to add collisions to the tilemap.
Click on the Tilemap in the hierarchy, add a 'Tilemap Collider 2D' component. The tiles you put down should be highlighted in green.

There is still a problem although it is hard to see. When you hit play some of the actions and animation may look weird. In addition you cannot jump.

Layers

Unity organises colliders into layers depending on their function. You can create layers of your own to control collision detection. We need to create a **ground** layer to define objects that form the ground.
Select your tilemap and look in the Inspector window for the 'Layers' combo box. In this box select Add Layer.
Create a new layer (in position 8) called Ground.
Finally we need to tell our Character controller which layer the ground is (it is currently blank).
Find the 1-Player prefab and open it. Find the Character Controller Bomber component and find the property labelled 'Ground Layer' set this to 'Ground' (or whatever you called your new layer).

Hit play

Hopefully everything will work now.