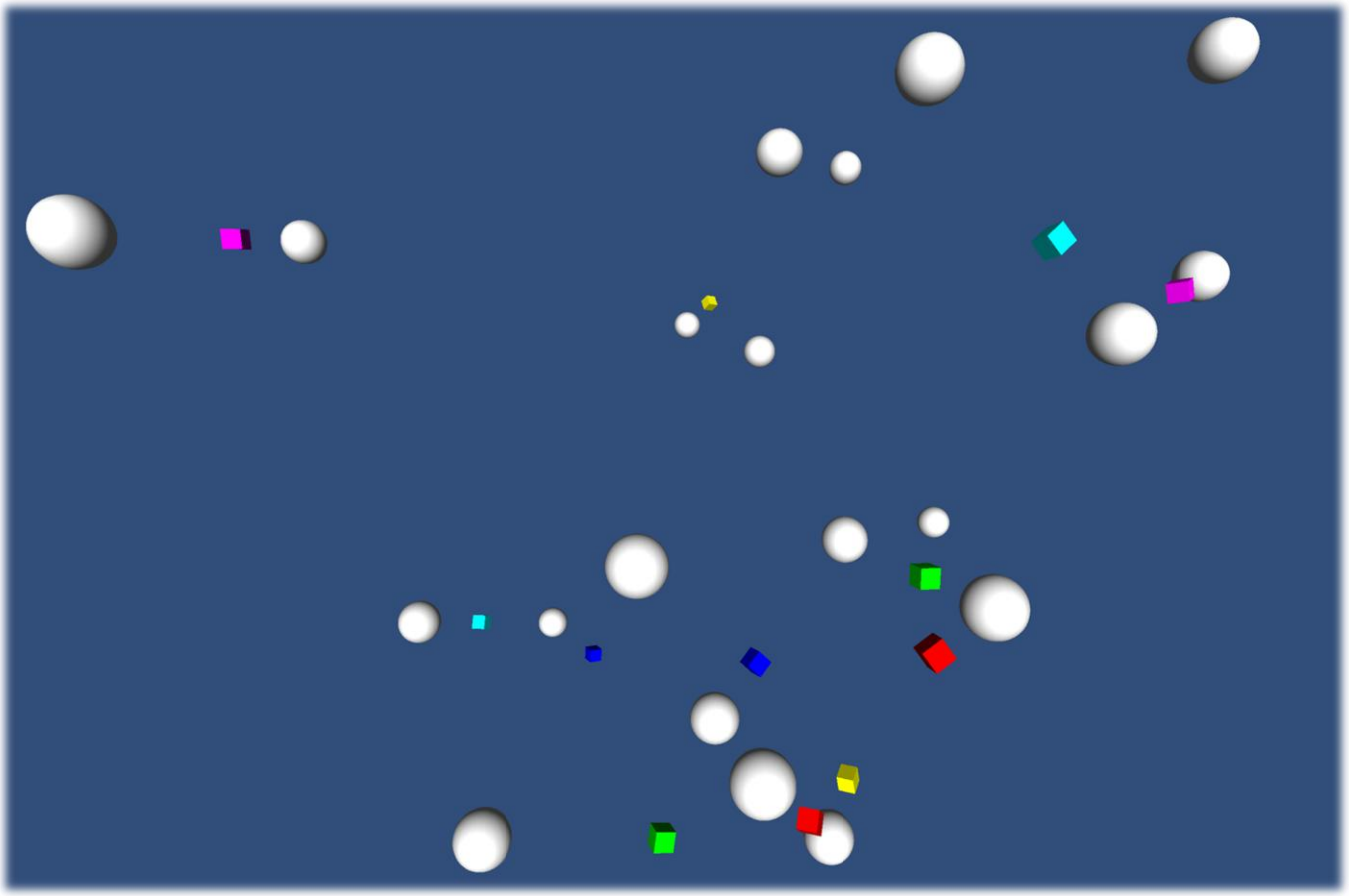
TradeSys

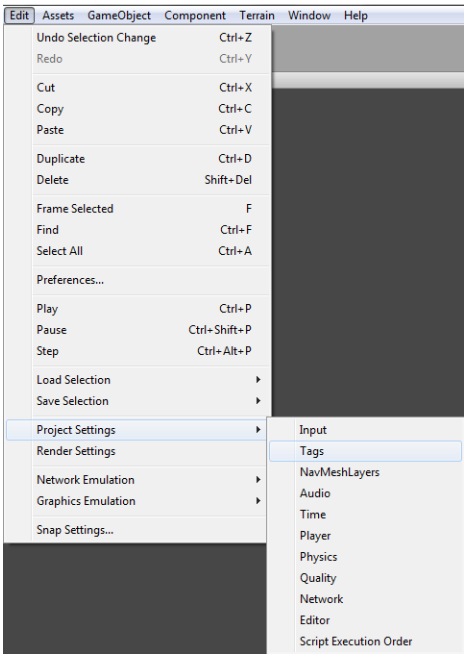


A trading and manufacturing system

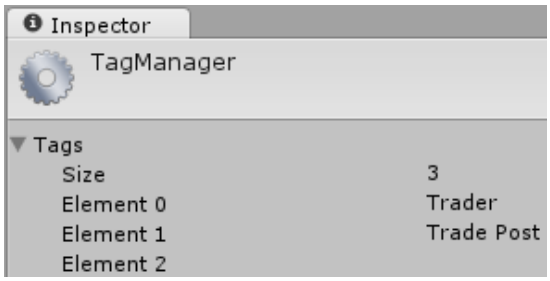
Version 1.2

Tradesys requires some setup before you can start sending out your traders, but fortunately this is very simple.

Setting up TradeSys:



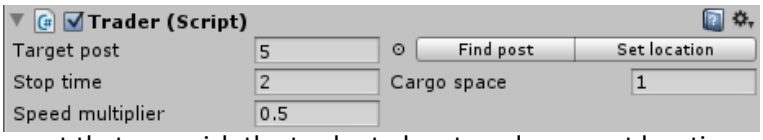
1. New tags need to be added to your game. The tags need to be called ‘Trader’ and ‘Trade Post’. Tag adding can be found by Edit > Project Settings > Tags. Here, there is a dropdown of Tags, and the new tags are added here.



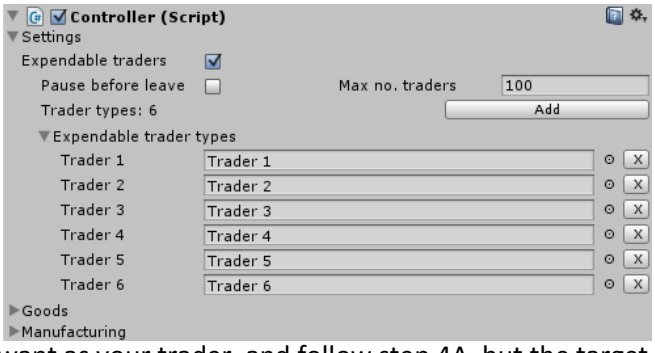
2. An empty GameObject needs to be created and called ‘Controller’. Add the controller script to this object. This will handle all of the possible trades that you set up.
3. Now it is time to setup the Trade Post. Either add a new GameObject (this time not empty, otherwise you won’t be able to see it!), or on a previously created object that you want to be your Trade Post, set the tag to Trade Post. Add the TradePost script to this object; repeat this step for all of your posts.

If you are having certain traders within your game going from post to post, follow step 4A, if you want the traders to be created at a post and then destroyed when they get to their destination, follow step 4B.

4A. The Traders need to be sorted now. Once again, either create a new object, or use a previously added object. Change the tag to Trader and add the trader script. Either put the trader near the location of the trade post (needs to be <1 unit away to be found) and press the find post button. The other option is to set the post that you wish the trader to be at, and press set location and it will move the trader to the correct location to be inside the trade post. The stop time value is how long the trader has to stop at each post for before it is allowed to leave, it helps make it slightly more realistic, and the cargo space is the maximum mass of cargo it can carry. The speed multiplier is part of demo code, which would be removed to work with your own AI. Repeat this step for each of your traders.



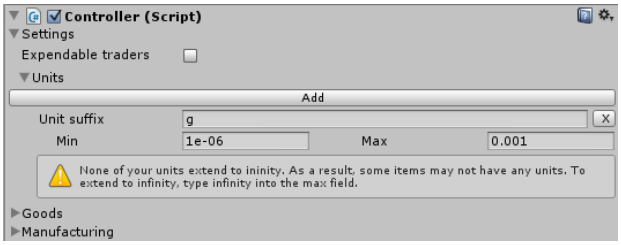
4B. In controller, there is a group called settings, turn on expendable traders if you want your traders to be created and destroyed. Then, you need to set the maximum number of traders allowed at any one time. Setting this to 0 means that an infinite number are allowed. You also need to set the different traders that can be created, and the controller will randomly select a trader. Pressing ‘Add’ will create a new trader type, where you then select the prefab for the trader. To create the prefab, add the object you want as your trader, and follow step 4A, but the target post does not need to be set because this will be set by the controller. Once this has been done, drag the object from the Hierarchy into the Projects folder, where it will create the prefab. The object in your

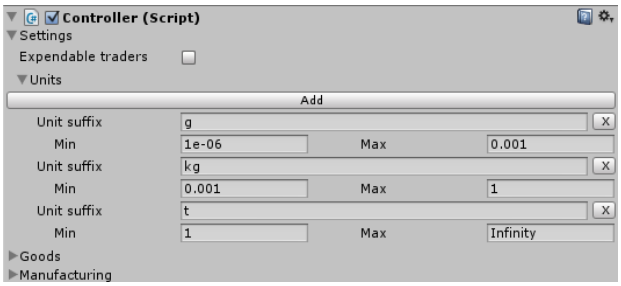


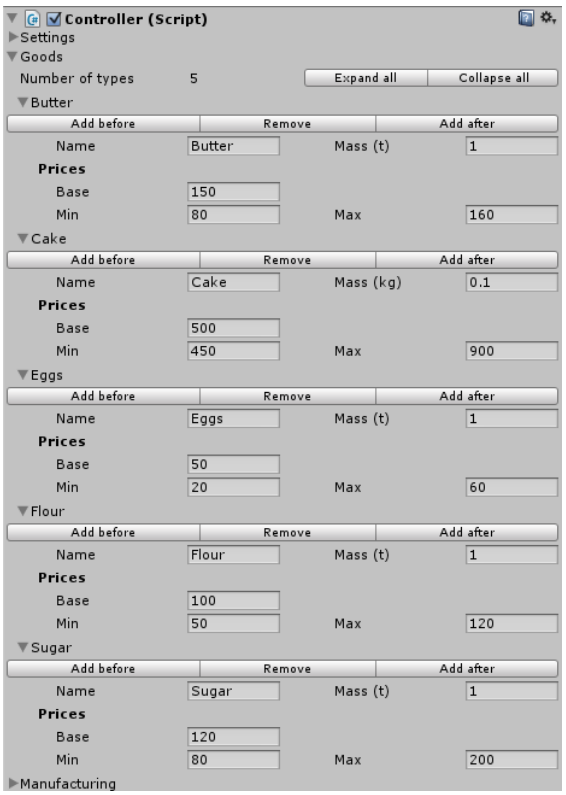
scene view can now be deleted, and the prefab added to the trader type list. There is also the option to make the traders pause for the time defined in each trader, or leave unchecked if you want the trader to be created and they instantly leave.

Adding goods to trade:

1. Firstly, in order for the items to display a unit, the units found under the settings menu needs to be sorted. Press 'Add' to add a new unit, and enter the suffix you wish the unit to have. The min and max values also need to be set. An item will have that unit if the mass is greater than or equal to the min, but less than the max. This means that to always show a unit, the max value of one unit needs to be the same as the min value of the next. The max value for the final unit needs to be set as infinity, so just type in 'infinity'. If there are any overlaps, or no units extend to infinity, a warning will show up in the inspector.

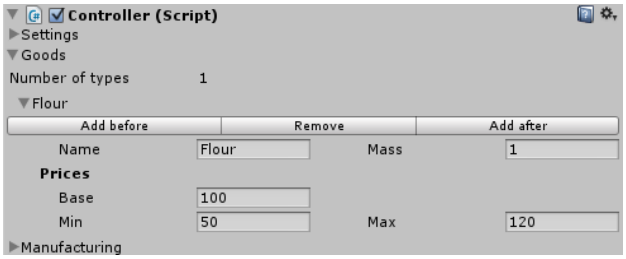




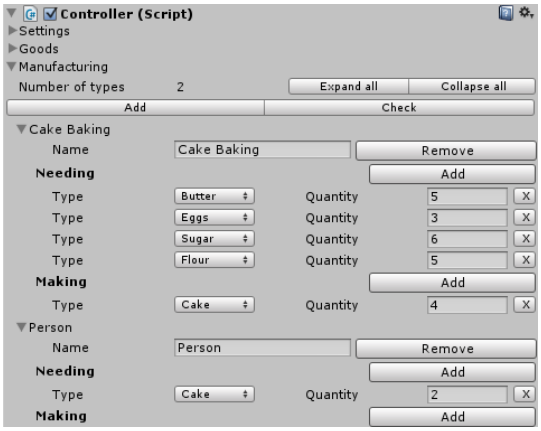


2. On the controller object, under goods, press the 'Add' button. This will create a new item where you can set its name. The mass of each item affects the number that can be carried by the trader. The minimum value for this is 0.000001, which if 1 = 1 ton, then that is 1 gram! If units have been set up, then the unit that will be used is shown in brackets. The prices also need setting; there are three different values that require setting. The base price is the price used to work out the price at each trade post, and the min and max will limit the prices to within the range specified.

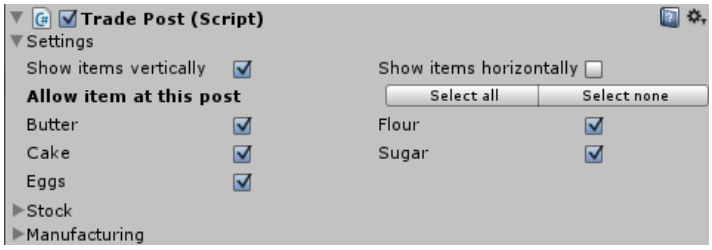
3. Each item can be removed using the 'Remove button', and new items can be added before or after, so it is possible to keep your items in alphabetical order.

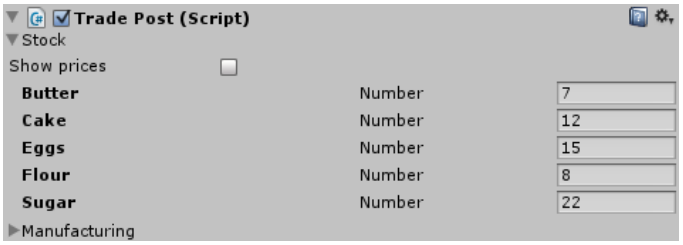


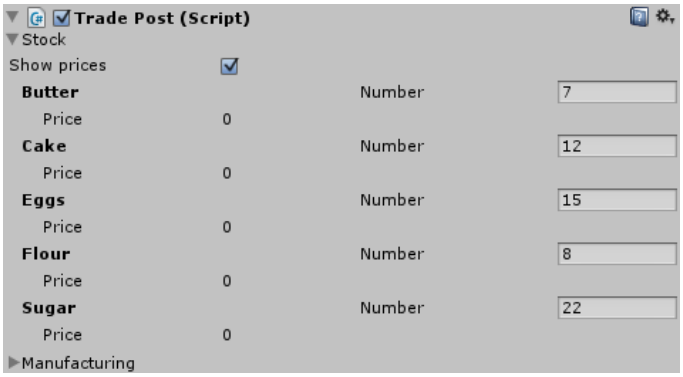
4. Manufacturing processes are also set up in the controller, and a new process is made by pressing the 'Add' button. Here, you can set its name, remove it, or set the items in the needing and making sets. In both these groups, it will only need or make items that you have specified in the goods section. Note the check button, more on that later!

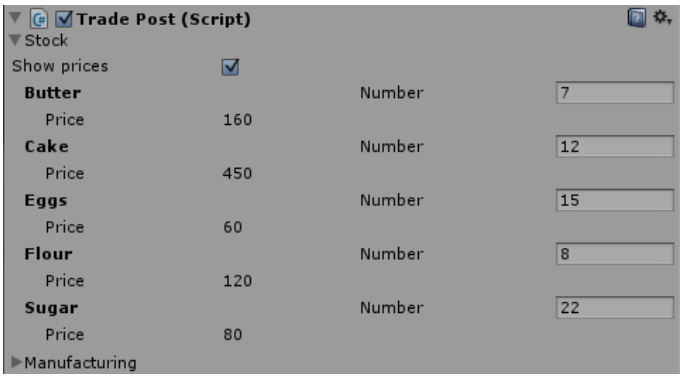


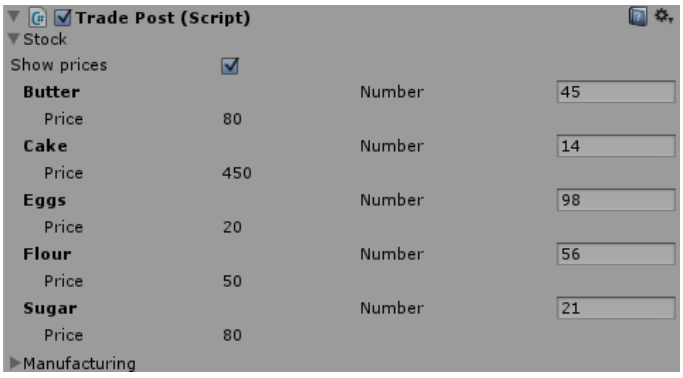
5. Now that you have added the items in your game and the different manufacturing processes, it is now time to sort out the trade posts. Under the settings group, it has the names of each different item that has been set up in controller. To disable a certain item from being traded at that station, just uncheck the box and the item will disappear in the stock group and any manufacturing process that involved that item will disappear. Under the stock group, it will show all of the items that you have set in the controller and have enabled. All you have to do is set how many are found at the post at the beginning of the game. The price cannot be set because the controller sorts this out for you, and will change throughout the game! The toggle is there so that it is possible to see the prices change while you are testing the game.





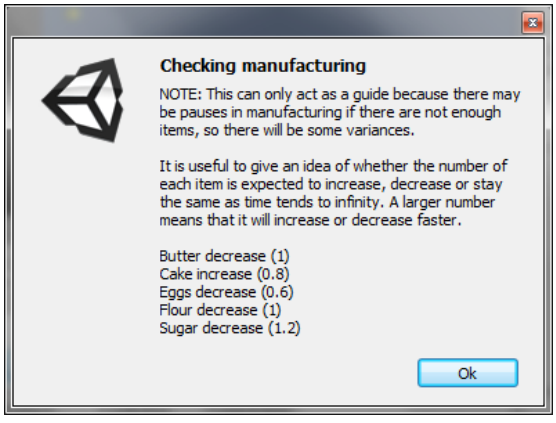






On the left, the numbers for a station that has been set up, the right shows that the prices before the start are 0. Below are the numbers and prices for two stations at the start of the game, once the prices have been generated.

6. Under the manufacturing group, if you want the post to follow one of the processes, then check the box. This will enable you to set how long it waits before the process is repeated. It can only manufacture items when it has the required number of each item set in the controller. Steps 4 and 5 need to be repeated for each of your Trade Posts.
7. Remember the check button in the controller under the manufacturing? Once all of the manufacturing processes have been set at the trade posts, press this and it will go through each item and will work out if the number of each item could be expected to increase, decrease or stay the same. This is only a guide because the numbers are based on the post always being able to follow a manufacturing process when the time between manufacturing is great enough.



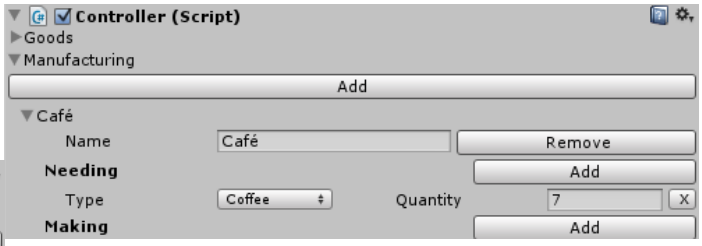
You have now successfully set up TradeSys!

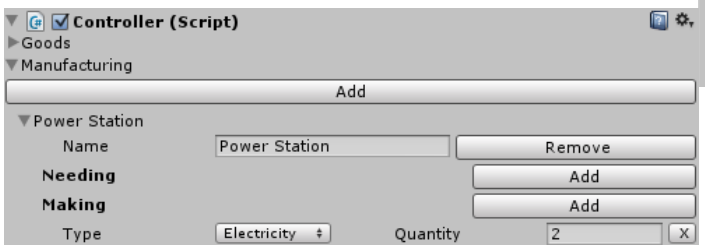
Information: In the trader, the Update() is demo code, added to show trader movement. This would be replaced with your own AI with the target post as the final target destination. When it reaches the destination, it needs to call the AtLocation() method.

Update Instructions: Some methods have been edited, so may produce errors, but this is because of a name change to be similar to other named methods or that they now require extra inputs. Check below in the useful methods section for more information. New methods have also been added, so check below.

Tips:

- The manufacturing processes do not need to have items in needing or making; for example, a café would use coffee, but not produce anything because it is used inside. As a result, only the needing section would be used.





- Equally, a solar power station may only produce electricity and not require inputs, so only electricity on the making would be needed.
- A more industrialised trade post would have quicker manufacturing processes, so reduce the time to create. Less industrialised places would take longer, so would have a higher value.

Useful Methods:

- To enable a new trade post, use:

nameOfTradePost.GetComponent<TradePost>().NewPost(**int[] itemNumbers**, **int[] manufactureTimes**);

You will need to change the variables written in bold to the chosen ones.ItemNumbers is an array which is the number of each item found at the post. Set this to be -1 if you want the item to be disabled at the post. ManufactureTimes is an array of times which are used to set whether it is possible to manufacture an item at that post. If the number is greater than 0, it is enabled. The itemNumbers array needs to be the same length as the number of items available, and the manufacture times needs to have the same length as the number of manufacturing processes.

- To enable or disable a post that has previously been enabled:

nameOfTradePost.GetComponent<TradePost>(). PostEnableDisable(**true / false**);

You will need to change the variable written in bold to the chosen ones. This method will enable or disable all of the required parts, but your code that calls this method will need to enable or disable the script / object after calling the method, because otherwise trading to the post will continue.

- To enable or disable certain manufacturing processes during game play:

nameOfTradePost.GetComponent<TradePost>().ManufactureEnableDisable(**true / false**, **manufactureID**, **timeToCreate**);

You will need to change the variables written in bold to the chosen ones. ManufactureID is the manufacturing process number, as found in the controller, with the first being 0, like an array.

- To enable or disable a certain item:

nameOfTradePost.GetComponent<TradePost>().ItemEnableDisable(**true / false**, **itemID**);

You will need to change the variables written in bold to the chosen ones. ItemID is the item number, as found in the controller, and the first item is 0.

- If you are not using expendable traders, to enable a new trader, use:

nameOfTrader.GetComponent<Trader>().NewTrader(**post**, **space**);

You will need to change the variables written in bold to the chosen ones. Post is the post that the trader starts at, and the space is how much cargo space the trader has. This method does not change or set a stop time, but this line has been added and would just require the comments to be removed.

Change Log

VERSION	CHANGES
V1.0	- Initial release
V1.1	- Traders have cargo size and items require mass specified so traders cannot take infinite items. - Traders can now take multiple types of item as long as they all go to the same place. - Traders can be set as expendable, so will be created at required station and destroyed on arrival. - Can disable items at posts so will not be traded or manufactured. - UI tweaks : • Can hide or show prices at trade posts.
V1.2	- A trader custom inspector has been added. This also includes buttons for post finding based on current location, or location setting based on the target post. - Goods now have units which are based on the mass of each item. - Can check the numbers of items expected as time increases through manufacturing. - Added a fully commented player script and created a new scene with this in. This includes a fully functioning shop mode, and click on a trader to view info about the trader. - Added a post enable disable method. - Added method for easy allowing trade of an item at a trade post. - Fixed the pricing of items as before any items being carried would be ignored because it would recount each time. Now does not recount, so should also improve performance! - UI tweaks : • Can now view the items to enable / disable at trade posts increasing horizontally or vertically. • Select all / Select none on enable / disable at trade posts. • Expand all / Collapse all on goods and manufacturing in the controller.