



Improvement

Auto-mapper: general ledger to costing ledger
expense code mapping

Walkthrough guide to the auto- mapper software

March 2019

We support providers to give patients safe, high quality, compassionate care within local health systems that are financially sustainable.

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1. Introduction

1. This is the manual to using the auto-mapper software. It provides a full end-to-end walkthrough of the process for mapping general ledger (GL) expense codes to costing ledger (CL) expense codes.

Background

2. The previous version of the auto-mapper was hosted on the website R-Shiny. The mapping process involved uploading a Comma-Delimited file containing a trust's GL codes to the web application. A series of statistical calculations was then performed to find the most appropriate match between the GL and CL expense codes.

Figure 1: Previous iteration of acute auto-mapper

Standardised cost ledger expense code automapper app (V1.0)

Choose CSV File to upload

Browse... No file selected

Download matching output

Header

Separator

Comma

Semicolon

Tab

Quote

None

Double Quote

Single Quote

Display

Head

All

3. While the auto-mapper worked exceptionally well in most cases, service feedback highlighted a few minor issues:
 - low matching accuracy for complex codes resulting in incorrect matches
 - reformatting of codes after processing
 - multiple matches brought back for a single GL code
 - loss of some expense codes because the application mistakes them for a duplicate
 - Band 8a letter mismatches
 - large amount of post-match analysis still necessary
 - each sector needs its own specific auto-mapper.
4. Following engagement with the service, we have developed a new and improved auto-mapper that resolves the above issues and introduces new functionality to help costing practitioners in the long term.

Main changes to the 2019 auto-mapper

5. The main changes in the 2019 auto-mapper are:
 - improved graphics–user interface make it easier for users to interact with the software
 - improved statistical calculations generate a higher percentage ratio of matches
 - a single auto-mapper caters for all sectors
 - the auto-mapper can be configured for desired parameters
 - memory file function.

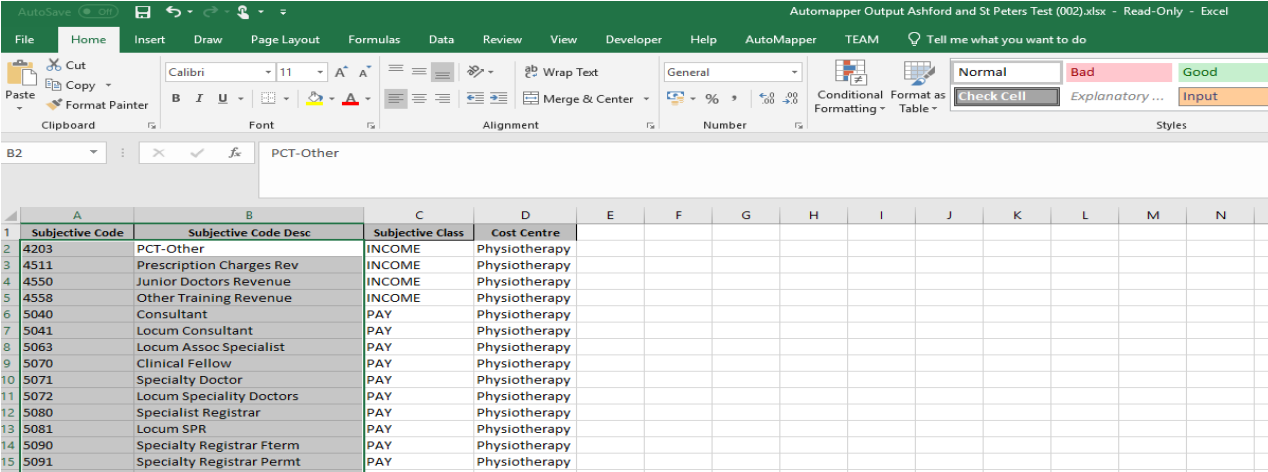
2. Quick start

- This section tells you how to get started using the auto-mapper application. For more detailed information, we advise you to read the whole manual.

Before you use the auto-mapper

- Open your GL in Excel. Highlight the GL expense codes and descriptions columns. Click 'Data' on the Excel ribbon and then click 'Remove Duplicates'. Once your duplicates have been removed, highlight your data, right click and press 'Copy'. **Do not** copy the headers in your highlighted section.
- Open the **auto-mapper template master file** which can be downloaded from the auto-mapper section in the following link: <https://www.openlearning.com/nhs/courses/costing-improvement/homepage>. Paste the data copied from your GL file into the 'General Ledger' tab as shown in Figures 2 and 3. Save this on your computer.

Figure 2: Copying data from your GL



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Subjective Code	Subjective Code Desc	Subjective Class	Cost Centre										
2	4203	PCT-Other	INCOME	Physiotherapy										
3	4511	Prescription Charges Rev	INCOME	Physiotherapy										
4	4550	Junior Doctors Revenue	INCOME	Physiotherapy										
5	4558	Other Training Revenue	INCOME	Physiotherapy										
6	5040	Consultant	PAY	Physiotherapy										
7	5041	Locum Consultant	PAY	Physiotherapy										
8	5063	Locum Assoc Specialist	PAY	Physiotherapy										
9	5070	Clinical Fellow	PAY	Physiotherapy										
10	5071	Specialty Doctor	PAY	Physiotherapy										
11	5072	Locum Specialty Doctors	PAY	Physiotherapy										
12	5080	Specialist Registrar	PAY	Physiotherapy										
13	5081	Locum SPR	PAY	Physiotherapy										
14	5090	Specialty Registrar Fterm	PAY	Physiotherapy										
15	5091	Specialty Registrar Permt	PAY	Physiotherapy										

Figure 3: Pasting data from GL into the auto-mapper template master file

	A	B	C	D	E	F	G	H	I
1	Your GL Subjective Code	Your GL Subjective Code Desc	Subjective Class	Cost Centre					
2	4203	PCT-Other	INCOME	Physiotherapy					
3	4511	Prescription Charges Rev	INCOME	Physiotherapy					
4	4550	Junior Doctors Revenue	INCOME	Physiotherapy					
5	4558	Other Training Revenue	INCOME	Physiotherapy					
6	5040	Consultant	PAY	Physiotherapy					
7	5041	Locum Consultant	PAY	Physiotherapy					
8	5063	Locum Assoc Specialist	PAY	Physiotherapy					
9	5070	Clinical Fellow	PAY	Physiotherapy					
10	5071	Specialty Doctor	PAY	Physiotherapy					
11	5072	Locum Speciality Doctors	PAY	Physiotherapy					
12	5080	Specialist Registrar	PAY	Physiotherapy					
13	5081	Locum SPR	PAY	Physiotherapy					
14	5090	Specialty Registrar Fterm	PAY	Physiotherapy					
15	5091	Specialty Registrar Permt	PAY	Physiotherapy					
16	5100	Senior House Officer	PAY	Physiotherapy					
17	5101	Locum S.H.O. (including FY2)	PAY	Physiotherapy					
18	5107	Foundation Programme - F2	PAY	Physiotherapy					
19	5125	General Practitioners	PAY	Physiotherapy					
20	5251	Bank nurse band 5	PAY	Physiotherapy					
21	5780	Agency Medical Consultant	PAY	Physiotherapy					
22	5782	Agency Med SPR	PAY	Physiotherapy					
23	5783	Agency Med SHO & HO	PAY	Physiotherapy					
24	7020	Med & Surg Equip General	NON-PAY	Physiotherapy					
25	7022	Med & Surg Equip Leases	NON-PAY	Physiotherapy					
26	7041	Med & Surg Maint Contract	NON-PAY	Physiotherapy					
27	7080	Patients Appl: Purchase	NON-PAY	Physiotherapy					
28	7126	Laboratory Test Kits	NON-PAY	Physiotherapy					
29	7180	Staff Uniforms & Clothing	NON-PAY	Physiotherapy					
30	7181	Protective Clothing	NON-PAY	Physiotherapy					
31	7191	Cleaning Materials	NON-PAY	Physiotherapy					
32	7210	Other Gen Supplies & Srv	NON-PAY	Physiotherapy					
33	7220	Printing Costs	NON-PAY	Physiotherapy					
34	7221	Stationery	NON-PAY	Physiotherapy					
35	7241	Phone Rental and Calls	NON-PAY	Physiotherapy					
36	7244	Staff Location/Bleeps	NON-PAY	Physiotherapy					
37	7252	Recruitment Agency Fees	NON-PAY	Physiotherapy					
38	7253	Staff Recruitment Advert	NON-PAY	Physiotherapy					

- 9. Again browse through to the auto-mapper section in the following link: <https://www.openlearning.com/nhs/courses/costing-improvement/homepage>.

Figure 4: Auto-mapper user interfaces

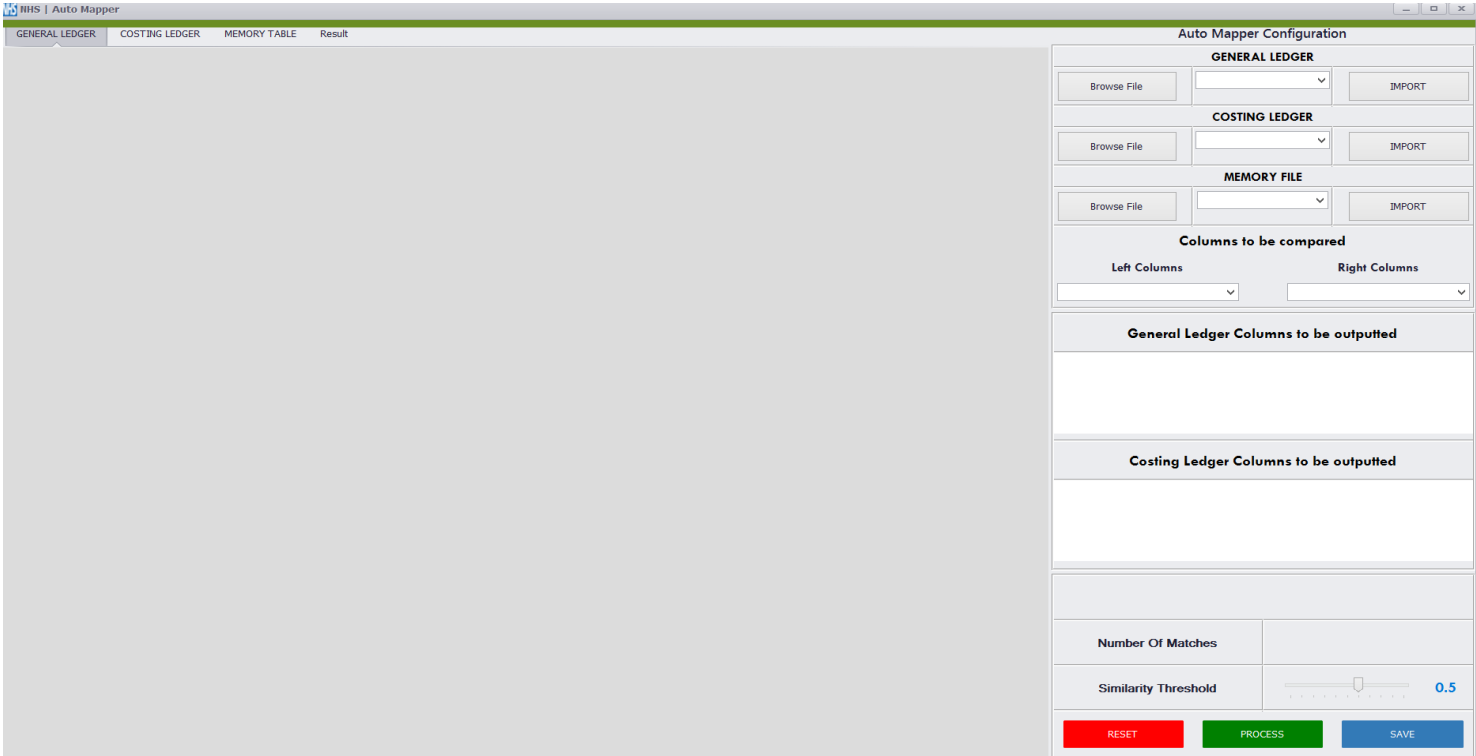
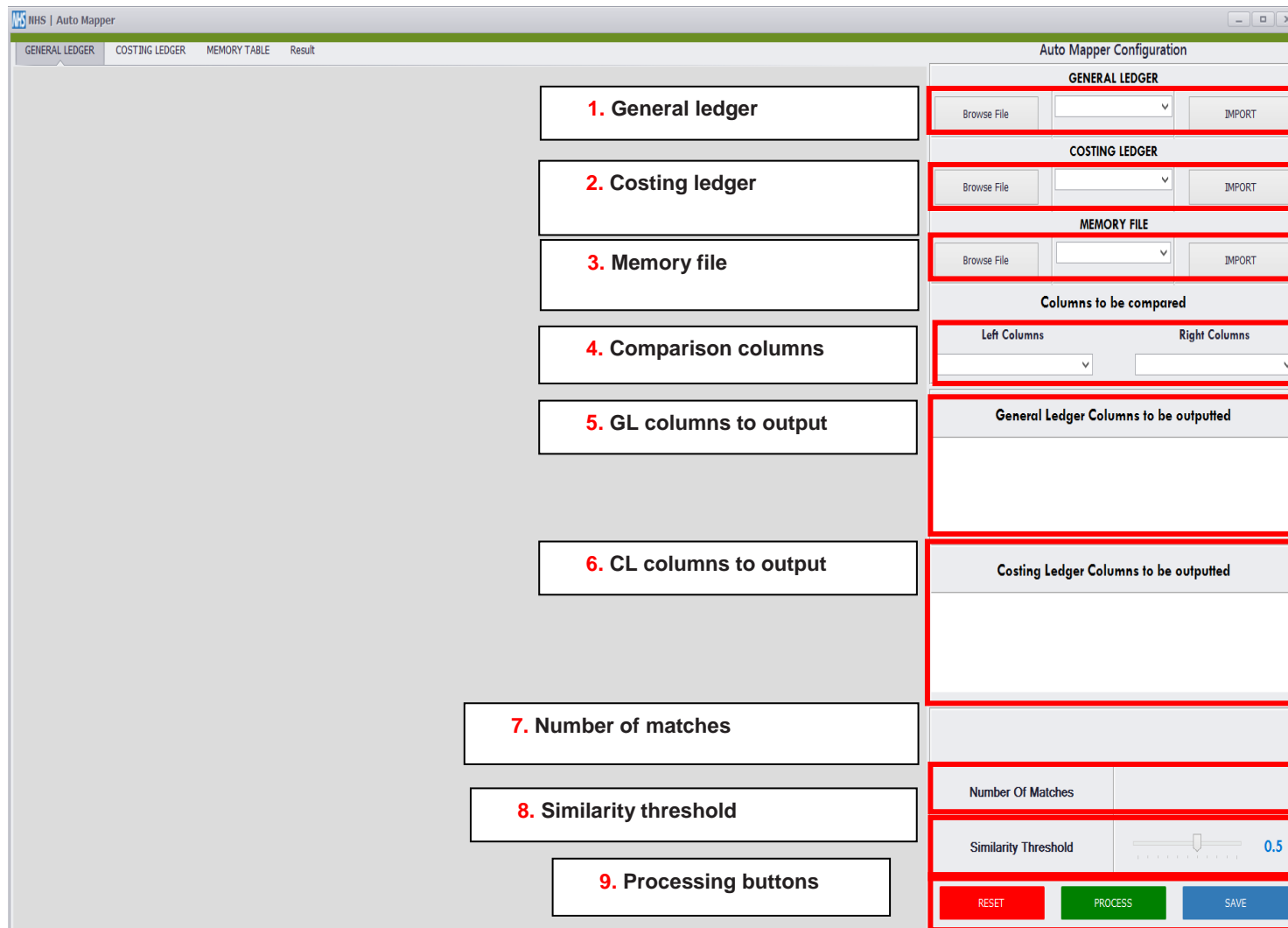


Figure 5: Annotated auto-mapper user interfaces, with the numbered interfaces explained below



- 1. General ledger:** Click 'Browse File' and navigate to your **auto-mapper master template file** containing the pasted in GL codes. Click 'Open'. Using the dropdown menu select the 'General Ledger\$' tab and click 'IMPORT'.
- 2. Costing ledger:** Click 'Browse File' and navigate to your **auto-mapper master template file** containing the pasted in GL codes. Click 'Open'. Using the dropdown menu select 'Costing Ledger\$'.
- 3. Memory file:** Click 'Browse File' and navigate to your **auto-mapper master template file** containing the pasted in GL codes. Click 'Open'. Using the dropdown menu select the 'Costing Ledger\$' worksheet which contains your memory codes. See section 'Using the memory file function' for more detail on memory functionality. **Please note: you do not need to import a memory file when using the auto-mapper for the first time.**
- 4. Comparison columns:** Using the dropdown menus, 'tell' the software which GL and CL columns you want to map. The left column (GL) will be 'Your Subjective Code Desc' and the right column (CL) will be 'Expense Code Description'.
- 5. GL columns to output:** The columns in your GL will be listed here. Tick the boxes to 'tell' the auto-mapper which columns you want to include in the matching process output.
- 6. CL columns to output:** The columns in your CL will be listed here. Tick the boxes to 'tell' the auto-mapper which columns you want to be included in the matching process output.
- 7. Number of matches:** Once you have done the processing, you will be given a breakdown here of the number of matches the auto-mapper has found.
- 8. Processing buttons:** Once you have configured the auto-mapper, click the green 'Process' button. To cancel processing, click the red 'Cancel' button next to the blue progress bar. To export the output following processing, click the blue 'Save' button. You can clear the configuration at any time before processing by clicking the red 'Reset' button.

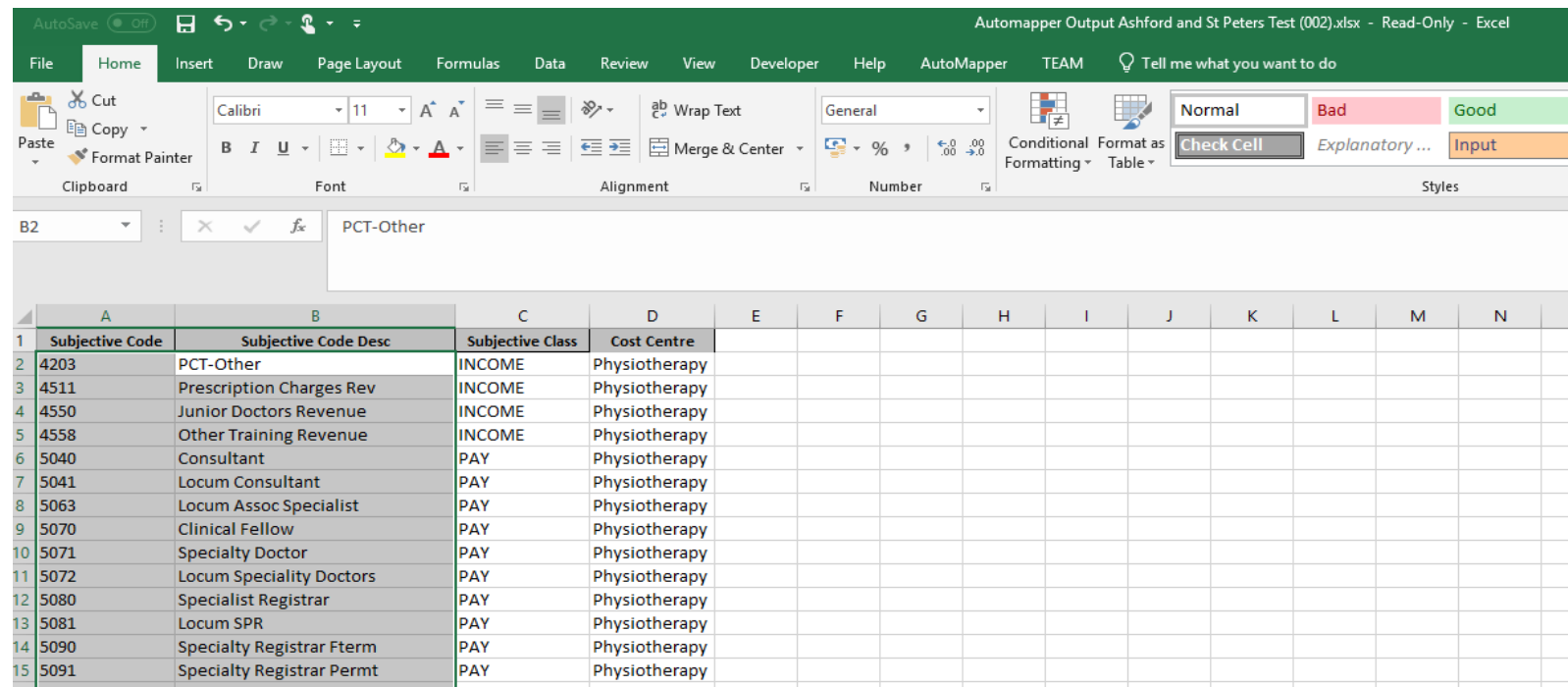
3. Preparing your input files

10. For ease of use, we encourage you first to organise your input files for processing, as described below.

General ledger expense codes

11. Open your GL in Excel. Highlight the GL expense codes and descriptions columns. Click 'Data' on the Excel ribbon and then 'Remove Duplicates'. Once your duplicates have been removed, highlight your data, right click and click 'copy'. **Do not** copy the column headers in your highlighted section.

Figure 6: Copying data from your GL



The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Subjective Code	Subjective Code Desc	Subjective Class	Cost Centre										
2	4203	PCT-Other	INCOME	Physiotherapy										
3	4511	Prescription Charges Rev	INCOME	Physiotherapy										
4	4550	Junior Doctors Revenue	INCOME	Physiotherapy										
5	4558	Other Training Revenue	INCOME	Physiotherapy										
6	5040	Consultant	PAY	Physiotherapy										
7	5041	Locum Consultant	PAY	Physiotherapy										
8	5063	Locum Assoc Specialist	PAY	Physiotherapy										
9	5070	Clinical Fellow	PAY	Physiotherapy										
10	5071	Specialty Doctor	PAY	Physiotherapy										
11	5072	Locum Speciality Doctors	PAY	Physiotherapy										
12	5080	Specialist Registrar	PAY	Physiotherapy										
13	5081	Locum SPR	PAY	Physiotherapy										
14	5090	Specialty Registrar Fterm	PAY	Physiotherapy										
15	5091	Specialty Registrar Permt	PAY	Physiotherapy										

- If you want to see additional columns in the output after running the auto-mapper, select these in conjunction with the GL expense codes and descriptions. However, be sure that the first two columns of your highlighted selection are the GL expense codes and descriptions as the auto-mapper master template file enforces this order. Again, be sure to remove all duplicates from these additional columns.

Figure 7: Copying additional data from your GL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Subjective Code	Subjective Code Desc	Subjective Class	Cost Centre																			
2	4203	PCT-Other	INCOME	Physiotherapy																			
3	4511	Prescription Charges Rev	INCOME	Physiotherapy																			
4	4550	Junior Doctors Revenue	INCOME	Physiotherapy																			
5	4558	Other Training Revenue	INCOME	Physiotherapy																			
6	5040	Consultant	PAY	Physiotherapy																			
7	5041	Locum Consultant	PAY	Physiotherapy																			
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9	5070	Clinical Fellow	PAY	Physiotherapy																			
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14	5090	Specialty Registrar Fterm	PAY	Physiotherapy																			
15	5091	Specialty Registrar Permt	PAY	Physiotherapy																			
16	5100	Senior House Officer	PAY	Physiotherapy																			
17	5101	Locum S.H.O. (including FY2)	PAY	Physiotherapy																			
18	5107	Foundation Programme - F2	PAY	Physiotherapy																			
19	5125	General Practitioners	PAY	Physiotherapy																			
20	5251	Bank nurse band 5	PAY	Physiotherapy																			
21	5780	Agency Medical Consultant	PAY	Physiotherapy																			
22	5782	Agency Med SPR	PAY	Physiotherapy																			

Auto-mapper master template file

13. The auto-mapper master template file acts as a container for all the files required to run data through the auto-mapper. It will hold your GL expense codes and descriptions as well as the reference data for the expense codes found in the standardised CL.
14. Paste the data you have copied from your GL file into the 'General Ledger' tab of the auto-mapper template file and save it. Ensure that your GL codes and descriptions are in columns A and B respectively. You are now ready to run data through the auto-mapper.

Figure 8: Pasting data from your GL into the auto-mapper master template file

4. Configuring the auto-mapper

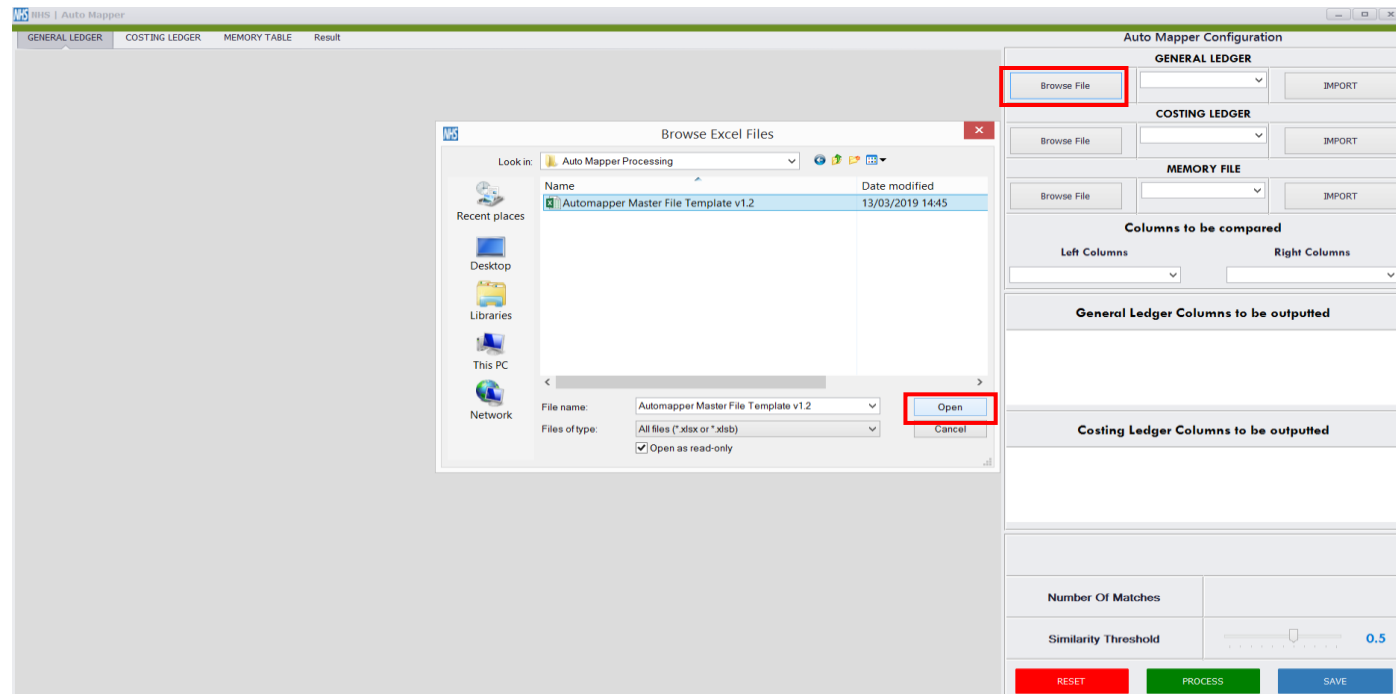
15. This section looks at:

- importing a GL and CL into the auto-mapper
- choosing the columns to be compared
- choosing the GL and CL columns to output
- similarity threshold.

Importing your general ledger into the auto-mapper

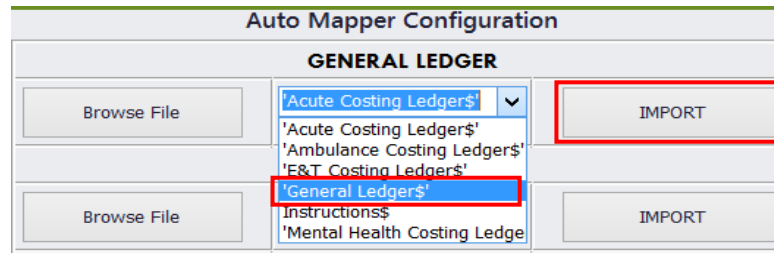
16. Open the auto-mapper. Under General Ledger, click 'Browse File', navigate to the **auto-mapper master template file** which now contains your GL codes and descriptions, and click 'Open'.

Figure 9: Importing your GL into the auto-mapper



17. Click on the dropdown menu. This list will display all the worksheets in the **auto-mapper master template file**. Click the 'General Ledger\$' option and then 'IMPORT'. You will know if the worksheet has been imported because the data in it will be visible in the auto-mapper preview window.

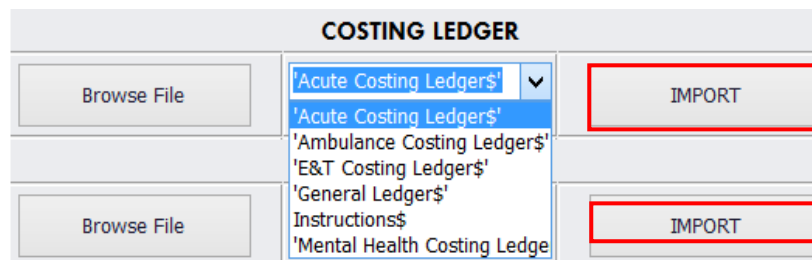
Figure 10: Import your GL into the auto-mapper



Importing your costing ledger into the auto-mapper

18. Now follow the same steps for the costing ledger. Under 'Costing Ledger', click 'Browse File' and navigate to the **auto-mapper master template file** which now contains your GL codes and descriptions. Click 'Open'. Using the dropdown menu, select the 'Costing ledger\$' and then 'IMPORT'. You will know if the worksheet has been imported because the data in it will be visible in the auto-mapper preview window.

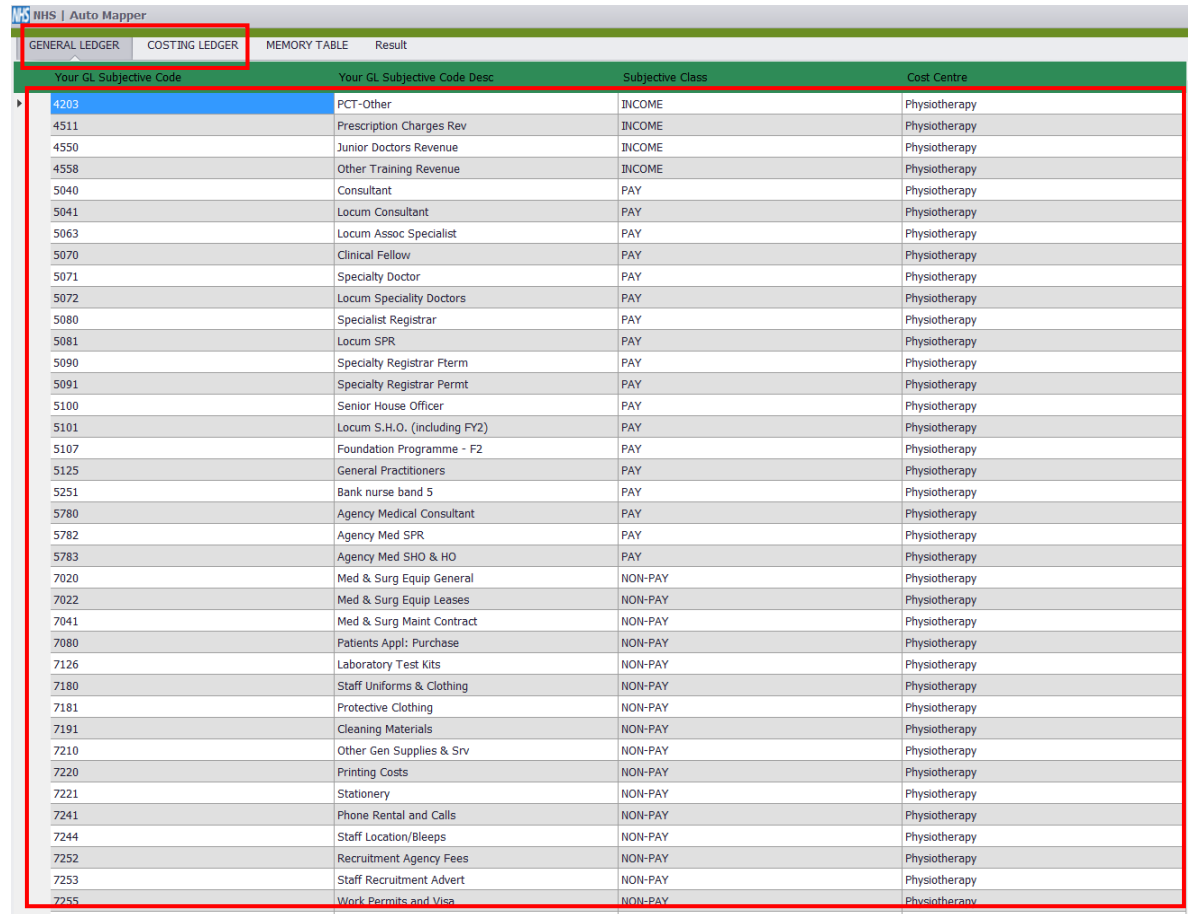
Figure 11: Import the CL into the auto-mapper



Preview window in the auto-mapper

19. The preview window will allow you to look at the data you have imported from each worksheet. Use this window to sense check that you have chosen the correct worksheet for the GL and CL files. The tabs allow you to flick between the previews for the GL and CL file.

Figure 12: Auto-mapper preview window



The screenshot shows the NHS Auto Mapper interface. At the top, there are four tabs: GENERAL LEDGER, COSTING LEDGER, MEMORY TABLE, and Result. The COSTING LEDGER tab is selected and highlighted with a red box. Below the tabs is a table with the following columns: Your GL Subjective Code, Your GL Subjective Code Desc, Subjective Class, and Cost Centre. The table contains 33 rows of data, with the first row (4203) highlighted in blue. The data is as follows:

Your GL Subjective Code	Your GL Subjective Code Desc	Subjective Class	Cost Centre
4203	PCT-Other	INCOME	Physiotherapy
4511	Prescription Charges Rev	INCOME	Physiotherapy
4550	Junior Doctors Revenue	INCOME	Physiotherapy
4558	Other Training Revenue	INCOME	Physiotherapy
5040	Consultant	PAY	Physiotherapy
5041	Locum Consultant	PAY	Physiotherapy
5063	Locum Assoc Specialist	PAY	Physiotherapy
5070	Clinical Fellow	PAY	Physiotherapy
5071	Specialty Doctor	PAY	Physiotherapy
5072	Locum Speciality Doctors	PAY	Physiotherapy
5080	Specialist Registrar	PAY	Physiotherapy
5081	Locum SPR	PAY	Physiotherapy
5090	Specialty Registrar Fterm	PAY	Physiotherapy
5091	Specialty Registrar Permit	PAY	Physiotherapy
5100	Senior House Officer	PAY	Physiotherapy
5101	Locum S.H.O. (including FY2)	PAY	Physiotherapy
5107	Foundation Programme - F2	PAY	Physiotherapy
5125	General Practitioners	PAY	Physiotherapy
5251	Bank nurse band 5	PAY	Physiotherapy
5780	Agency Medical Consultant	PAY	Physiotherapy
5782	Agency Med SPR	PAY	Physiotherapy
5783	Agency Med SHO & HO	PAY	Physiotherapy
7020	Med & Surg Equip General	NON-PAY	Physiotherapy
7022	Med & Surg Equip Leases	NON-PAY	Physiotherapy
7041	Med & Surg Maint Contract	NON-PAY	Physiotherapy
7080	Patients Appl: Purchase	NON-PAY	Physiotherapy
7126	Laboratory Test Kits	NON-PAY	Physiotherapy
7180	Staff Uniforms & Clothing	NON-PAY	Physiotherapy
7181	Protective Clothing	NON-PAY	Physiotherapy
7191	Cleaning Materials	NON-PAY	Physiotherapy
7210	Other Gen Supplies & Srv	NON-PAY	Physiotherapy
7220	Printing Costs	NON-PAY	Physiotherapy
7221	Stationery	NON-PAY	Physiotherapy
7241	Phone Rental and Calls	NON-PAY	Physiotherapy
7244	Staff Location/Bleeps	NON-PAY	Physiotherapy
7252	Recruitment Agency Fees	NON-PAY	Physiotherapy
7253	Staff Recruitment Advert	NON-PAY	Physiotherapy
7255	Work Permits and Visa	NON-PAY	Physiotherapy

Choosing the columns to be compared

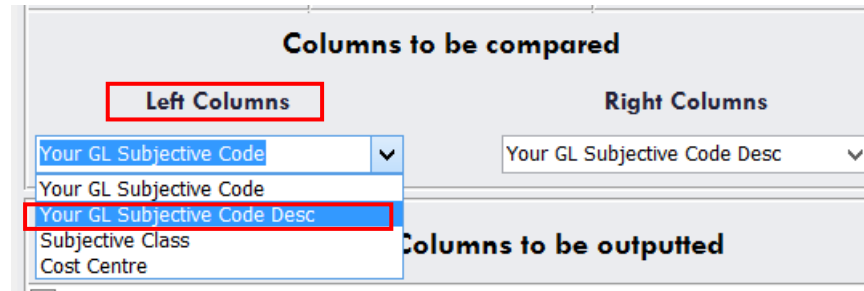
20. Once you have imported your GL and CL files into the auto-mapper, and are happy with the previews, the next step is to 'tell' the auto-mapper which columns in the GL and CL worksheets you want to map to each other.

Figure 13: Columns to be compared by the auto-mapper

Your GL Subjective Code	Your GL Subjective Code Desc	Subjective Class	Cost Centre
4203	PCT-Other	INCOME	Physiotherapy
4511	Prescription Charges Rev	INCOME	Physiotherapy
4550	Junior Doctors Revenue	INCOME	Physiotherapy
4558	Other Training Revenue	INCOME	Physiotherapy
5040	Consultant	PAY	Physiotherapy
5041	Locum Consultant	PAY	Physiotherapy
5063	Locum Assoc Specialist	PAY	Physiotherapy
5070	Clinical Fellow	PAY	Physiotherapy
5071	Specialty Doctor	PAY	Physiotherapy
5072	Locum Speciality Doctors	PAY	Physiotherapy
5080	Specialist Registrar	PAY	Physiotherapy
5081	Locum SPR	PAY	Physiotherapy
5090	Specialty Registrar Fterm	PAY	Physiotherapy
5091	Specialty Registrar Permt	PAY	Physiotherapy
5100	Senior House Officer	PAY	Physiotherapy
5101	Locum S.H.O. (including FY2)	PAY	Physiotherapy
5107	Foundation Programme - F2	PAY	Physiotherapy
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7020	Med & Surg Equip General	NON-PAY	Physiotherapy
7022	Med & Surg Equip Leases	NON-PAY	Physiotherapy
7041	Med & Surg Maint Contract	NON-PAY	Physiotherapy
7080	Patients Appl: Purchase	NON-PAY	Physiotherapy
7126	Laboratory Test Kits	NON-PAY	Physiotherapy
7180	Staff Uniforms & Clothing	NON-PAY	Physiotherapy
7181	Protective Clothing	NON-PAY	Physiotherapy
7191	Cleaning Materials	NON-PAY	Physiotherapy
7210	Other Gen Supplies & Srv	NON-PAY	Physiotherapy
7220	Printing Costs	NON-PAY	Physiotherapy
7221	Stationery	NON-PAY	Physiotherapy
7241	Phone Rental and Calls	NON-PAY	Physiotherapy
7244	Staff Location/Bleeps	NON-PAY	Physiotherapy
7252	Recruitment Agency Fees	NON-PAY	Physiotherapy
7253	Staff Recruitment Advert	NON-PAY	Physiotherapy
7255	Work Permits and Visa	NON-PAY	Physiotherapy

- The dropdown menu for the 'Left Columns' will show all the columns you have imported for the GL file that can be compared within the 'General Ledger\$' worksheet. As you want to map the descriptions of a GL expense code to a CL expense code, in the LEFT column you need to 'tell' the auto-mapper to do the comparison on 'Your GL Subjective Code Desc'. You can select this from the dropdown menu under 'Left Columns'.

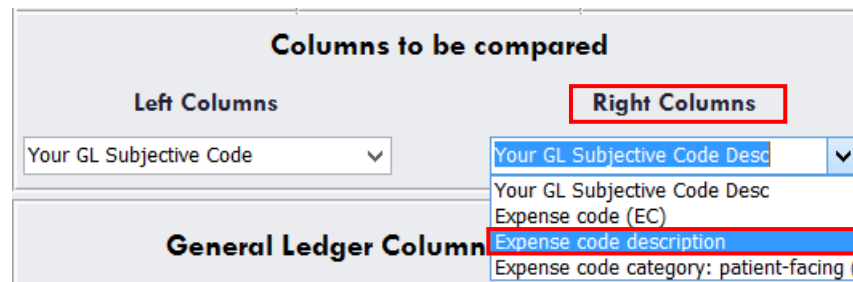
Figure 14: Selecting the LEFT GL column to be compared by the auto-mapper



- The next step is to do the same thing for the 'Right Columns'. This time a dropdown menu will show all the columns you have imported for the GL file that can be compared within the 'Acute Costing Ledger\$' worksheet. As you want to map the descriptions of a GL expense code to a CL expense code, in the RIGHT column you need to tell the auto-mapper to do the comparison on 'Expense code description'. You can select this from the dropdown menu under 'Right Columns'.

Figure 15: Selecting the RIGHT CL column to be compared by the auto-mapper

Caution: Do not select 'Your GL Subjective Code Desc' as the right column to be compared. This is only used for memory functionality. Please see section on using the memory file for more details.



Columns to output

23. You need to 'tell' the auto-mapper which columns from the GL 'General Ledger\$' and CL 'Acute Costing Ledger\$' you want to see in the final mapping output.

Figure 16: Columns to output

The screenshot displays the NHS Auto Mapper interface. On the left is a table with four columns: 'Your GL Subjective Code', 'Your GL Subjective Code Desc', 'Subjective Class', and 'Cost Centre'. The table lists various expense codes and descriptions, such as 'Removal Expenses', 'Travel & Subsistence', and 'Nurse band 8'. On the right is the 'Auto Mapper Configuration' panel. This panel includes sections for 'GENERAL LEDGER', 'COSTING LEDGER', and 'MEMORY FILE', each with a 'Browse File' button and an 'IMPORT' button. Below these is a 'Columns to be compared' section with 'Left Columns' (set to 'Your GL Subjective Code') and 'Right Columns' (set to 'Expense code description'). A red box highlights the 'Columns to be outputted' section, which is divided into 'General Ledger Columns to be outputted' and 'Costing Ledger Columns to be outputted'. The General Ledger section has checkboxes for 'Your GL Subjective Code', 'Your GL Subjective Code Desc', 'Subjective Class', and 'Cost Centre', with 'Cost Centre' checked. The Costing Ledger section has checkboxes for 'Your GL Subjective Code Desc', 'Expense code (EC)', 'Expense code description', and 'Expense code category: patient-facing (PF), support (S) cost typ', with the last three checked. At the bottom of the configuration panel, there are fields for 'Number Of Matches' and 'Similarity Threshold' (set to 0.5), and three buttons: 'RESET', 'PROCESS', and 'SAVE'.

24. Which 'General Ledger' columns are available for selection will depend on the 'General Ledger\$' worksheet. To select a column, tick the box next to it. In the example below, we have chosen to output three of the four columns from the GL.

Figure 17: GL columns to output

General Ledger Columns to be outputted	
<input checked="" type="checkbox"/>	Your GL Subjective Code
<input checked="" type="checkbox"/>	Your GL Subjective Code Desc
<input type="checkbox"/>	Subjective Class
<input checked="" type="checkbox"/>	Cost Centre

25. Which 'Costing Ledger' columns are available for selection will depend on the 'Acute Costing Ledger\$' worksheet. To select a column, tick the box next to it. In the example below, we have chosen to output three of the four columns from the CL.

Figure 18: CL columns to output

Costing Ledger Columns to be outputted	
<input type="checkbox"/>	Your GL Subjective Code Desc
<input checked="" type="checkbox"/>	Expense code (EC)
<input checked="" type="checkbox"/>	Expense code description
<input checked="" type="checkbox"/>	Expense code category: patient-facing (PF), support (S) cost typ

Similarity threshold

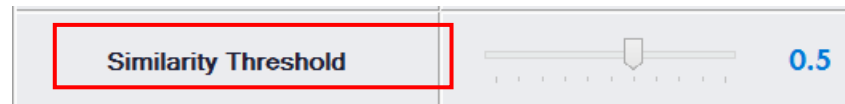
26. The 'Similarity Threshold' allows you to change the sensitivity of the matching: a threshold value of 1 'tells' the auto-mapper to look for matches that are 'EXACT', character for character, while a threshold value of 0.0 tells the auto-mapper to look for any matches that have a similarity of >0.0. Please note that the HIGHER the 'Similarity Threshold', the LOWER the number of matches that will be found and vice versa.
27. It is important to understand what the auto-mapper is doing when you set a threshold value. The auto-mapper processes at a single character level by performing a statistical calculation that determines how much difference there is between descriptions are. Table 1 illustrates the theoretical complexity of the similarity threshold in greater detail.

Table 1: Similarity value theory

General Ledger Codes			Costing Ledger Codes			Mapping
Row No.	Subj code	Subj Desc	Expense code (EC)	Expense code description	Expense code category: patient-facing (PF), support (S) cost typ	Similarity
1	700100	BLOOD PRODUCTS	7093	Blood products	PF	1.00
2	702000	MED SURG EQPT GENERAL	7068	Medical and surgical equipment - general	PF	0.53
3	704000	MED SURG EQPT REPAIRS	7066	Medical and surgical equipment maintenance / repairs and components	PF	0.31
4	717000	EXTERNAL CONTRACTS : CATERING	7239	Contract: Catering	S - Type1	0.62

28. You can see from Table 1 that setting a very high similarity value, such as 0.8, means that legitimate matches, such as those in rows two to four, are missed. In row 3, the calculated similarity is extremely low – 0.31. This is because the format of the Subjective Description ‘MED SURG EQPT REPAIRS’ in mathematical terms is very different from ‘Medical and surgical equipment maintenance/repairs and components’. Very high Similarity Thresholds are not always advisable..
29. To get the best from the auto-mapper and achieve a balanced trade-off between accuracy and context, we **recommend** setting a ‘**Similarity Threshold of 0.3**’. The default setting of 0.5 can be changed by clicking along the slider bar until you reach your desired threshold level; each grid line represents 0.1.

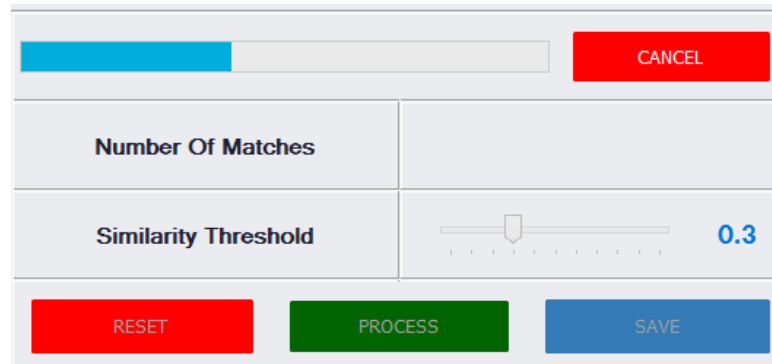
Figure 19: Similarity threshold



Processing

30. Once you have configured the auto-mapper, click the green ‘Process’ button. To cancel processing, click the red ‘Cancel’ button next to the blue progress bar. To export the output following processing, click the blue ‘Save’ button. You can also clear the configuration at any time before processing by clicking the red ‘Reset’ button.

Figure 20: Processing buttons



5. Post-processing analysis

31. This section gives recommendations for reviewing your output.

Reviewing your output

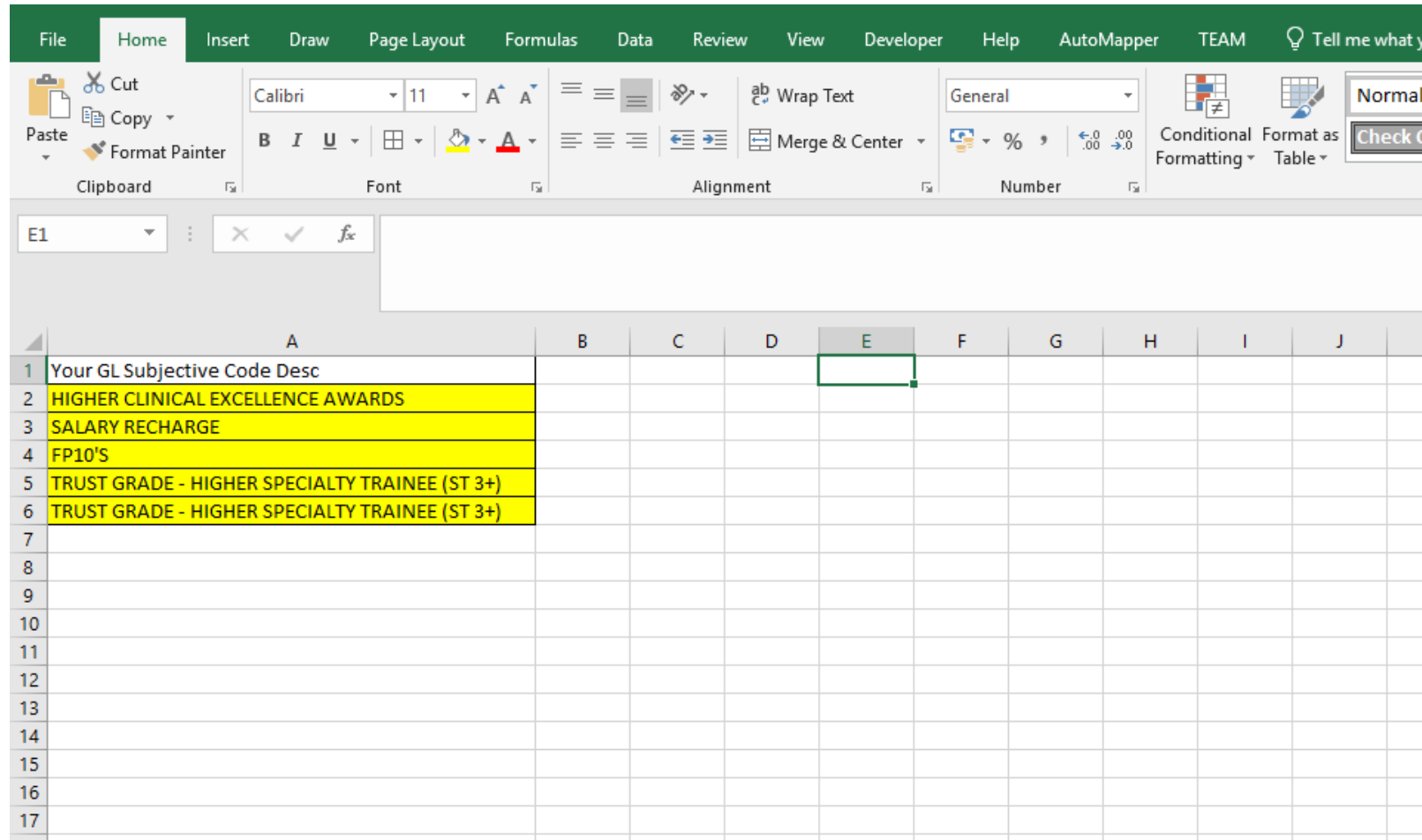
32. Once you have completed your first round of processing, we recommend you review the matched descriptions **row by row**. While this may sound like a tedious process, a quick row-by-row check will enable you to identify any descriptions from the GL that have not been mapped to an appropriate CL expense code.

Figure 21: Reviewing your output

A	B	C	D	E	F	G	H
1	Your GL Subjective Code Desc	Expense code (EC)	Expense code description	Expense code category: patient-facing (PFSimilarity			
2	702000 MED SURG EQPT GENERAL	7068	Medical and surgical equipment - general	PF	0.525		
3	702000 MED SURG EQPT GENERAL	7068	Medical and surgical equipment - general	PF	0.525		
4	704000 MED SURG EQPT REPAIRS	7066	Medical and surgical equipment maintenance / repairs and components	PF	0.313433		
5	467000 HIGHER CLINICAL EXCELLENCE AWARDS	5321	Clinical fellow	PF	0.333333		
6	700100 BLOOD PRODUCTS	7093	Blood products	PF	1		
7	470600 SALARY RECHARGE						
8	715000 PROVISIONS	7290	Provisions	S - type1	1		
9	717000 EXTERNAL CONTRACTS : CATERING	7239	Contract: Catering	S - Type1	0.62069		
10	718100 PROTECTIVE CLOTHING	7194	Protective clothing	S - type1	1		
11	721000 OTHER GENERAL SUPPLIES AND SERVICES	7214	Other general supplies and services	S - type1	1		
12	722000 PRINTING COSTS	7280	Printing costs	S - type1	1		
13	722100 STATIONERY	7281	Stationery	S - type1	1		
14	722100 STATIONERY	7281	Stationery	S - type1	1		
15	724100 TELEPHONE RENTAL AND CALL CHARGES	7216	Telephone rental and call charges	S - type1	1		
16	725000 ADVERTISING AND STAFF RECRUITMENT	7159	Staff advertising and recruitment	S - type1	0.636364		
17	726000 REMOVAL EXPENSES	7150	Removal expenses	S - type1	1		
18	706300 FP10'S						
19	727300 INTERVIEW EXPENSES	7190	Interview expenses	S - type1	1		
20	728000 LEASED CARS : CONTRACT	7269	Leased cars - private deductions	S - type1	0.375		
21	728000 LEASED CARS : CONTRACT	7269	Leased cars - private deductions	S - type1	0.375		
22	728100 LEASED CARS : PRIVATE DEDUCTIONS	7269	Leased cars - private deductions	S - type1	0.9375		
23	728200 STAFF LEASE CARS	7268	Contract: Leased cars	S - type1	0.47619		
24	728200 STAFF LEASE CARS	7268	Contract: Leased cars	S - type1	0.47619		
25	803220 TRUST GRADE - HIGHER SPECIALTY TRAINEE (ST 3+)						
26	803220 TRUST GRADE - HIGHER SPECIALTY TRAINEE (ST 3+)						
27	728200 STAFF LEASE CARS	7268	Contract: Leased cars	S - type1	0.47619		
28	729500 TAXI AND OTHER VEHICLE HIRE	7275	Taxi and other vehicle hire - patients	S - Type2	0.710526		
29	730000 TRAINING EXPENSES	7163	Training expenses	S - type1	1		
30	730100 TRAINING MATERIALS	7263	Cleaning materials	S - Type1	0.666667		
31	734200 CONTRACT : HYGIENE AND SANITARY	7198	Contract: hygiene and sanitary	S - type1	0.967742		

33. As you review the output, copy those GL Descriptions that have not been matched or have matched to an inappropriate CL expense code. Paste these into a new tab as shown below. We will show you how to add these descriptions into the 'Memory File' in the next section.

Figure 22: Identifying inappropriate/unmatched descriptions



Using the memory file

34. Once you have identified all the inappropriate and unmatched descriptions, as shown in the previous section, you must navigate to your **auto-mapper master template file** which contains your GL codes and descriptions. Click the 'Costing Ledger' tab and paste the inappropriate/unmatched descriptions into column A 'Your GL Subjective Code Desc' next to the appropriate CL expense code description that you want that code to match to.
35. In the example below you can see that the unmatched description 'TRUST GRADE - HIGHER SPECIALTY TRAINEE (ST 3+)' has been pasted into **column A row 1124** as the appropriate CL expense code is 'Specialty Training Tariff – ST3 Higher'. Repeat this for all the inappropriate/unmatched descriptions you identified in your post-processing analysis and then save as a new file – **auto-mapper master template file with memory**.

Figure 23: Identifying inappropriate/unmatched descriptions

	A	B	C	D
	Your GL Subjective Code Desc	Expense code (EC)	Expense code description	Expense code category: patient-facing (PF), support (S) cost type 1, type 2, or INC/ET/RD/BS
1114		7170	Tuition	S - type1
1115		7171	Placements - Tariff	S - type1
1116		7172	Placements - Non Tariff	S - type1
1117		7173	CPD/CD	S - type1
1118		7174	Bursary	S - type1
1119		7175	Medical School Education Support	S - type1
1120		7176	Trainers Grant	S - type1
1121		7177	Specialty Training Tariff- ST1	S - type1
1122		7178	Specialty Training Tariff - ST2	S - type1
1123		7179	Specialty Training Tariff - ST3	S - type1
1124	TRUST GRADE - HIGHER SPECIALTY TRAINEE (ST 3+)	7180	Specialty Training Tariff - ST3 Higher	S - type1
1125		7181	Specialty Training Tariff - ST4	S - type1
1126		7182	Specialty Training Tariff - ST5	S - type1
1127		7183	Specialty Training Tariff - ST6	S - type1
1128		7184	Foundation Training Tariff - F1	S - type1
1129		7185	Foundation Training Tariff - F2	S - type1
1130		7186	Dental SHO Training	S - type1
1131		5469	Support Assistant	PF
1132		5470	Nurse Manager	PF
1133		5471	MDT Coordinator	S - type2
1134		5818	Healthcare assistants - Support worker band 2	PF
1135		5819	Healthcare assistants - Support worker band 3	PF
1136		5822	Healthcare assistants - Support worker band 3 ban	PF
1137		5850	Healthcare assistants - Support worker band 4	PF
1138		5851	Healthcare assistants - Support worker band 2 ban	PF
1139		5853	Healthcare assistants - Support worker band 4 ban	PF
1140		7426	Funeral costs	PF
1141		5821	Counsellor	PF
1142		5823	Counsellor Agency	PF
1143		5463	Pay Recharge To - Other NHS - Clinical	S - Type2
1144		5464	Pay Recharge From - Other NHS - clinical	S - Type2
1145		7259	Laboratory Test Kits	PF

36. Return to the auto-mapper and browse this new file for your GL and CL as described in paragraphs 16 and 17. Import them into the auto-mapper. For the **Memory File**, browse to your newly created template file and open the 'Costing Ledger\$' worksheet which will now also contain the inappropriate/unmatched descriptions in column A. Click IMPORT and then PROCESS. Export the output to your computer. You will now see that the inappropriate/unmatched descriptions have been assigned to the appropriate CL expense descriptions.

Figure 24: Inappropriate/unmatched descriptions now map to the correct CL description with memory file

A	B	C	D	E	F	G	H	I	J	K	L
Your GL	Your Subjective Code Desc	Expense code (EC)	Expense code description	Expense code category: patient-facing (PF)	Similarity						
702000	MED SURG EQPT GENERAL	7068	Medical and surgical equipment - general	PF	0.525						
702000	MED SURG EQPT GENERAL	7068	Medical and surgical equipment - general	PF	0.525						
704000	MED SURG EQPT REPAIRS	7066	Medical and surgical equipment maintenance / repairs and components	PF	0.313433						
728200	STAFF LEASE CARS	7268	Contract: Leased cars	S - type1	0.47619						
803220	TRUST GRADE - HIGHER SPECIALTY TRAINEE (ST 3+)	7180	Specialty Training Tariff – ST3 Higher								
803220	TRUST GRADE - HIGHER SPECIALTY TRAINEE (ST 3+)	7180	Specialty Training Tariff – ST3 Higher								
728200	STAFF LEASE CARS	7268	Contract: Leased cars	S - type1	0.47619						
729500	TAXI AND OTHER VEHICLE HIRE	7275	Taxi and other vehicle hire - patients	S - Type2	0.710526						
730000	TRAINING EXPENSES	7163	Training expenses	S - type1	1						
730100	TRAINING MATERIALS	7263	Cleaning materials	S - Type1	0.666667						
734200	CONTRACT : HYGIENE AND SANITARY	7198	Contract: hygiene and sanitary	S - type1	0.967742						
735000	FURNITURE AND FITTINGS	7205	Furniture and fittings	S - type1	1						
735100	OFFICE EQUIPMENT AND MATERIALS : PURCHASE	7206	Office equipment and materials - purchase	S - type1	0.95122						
735400	COMPUTER HARDWARE PURCHASES	7209	Computer hardware purchases	S - type1	1						
770000	(INTERNAL) RECHARGE : RECEIVED	7436	Internal recharge received - estates	S - Type1	0.611111						
780000	(INTERNAL) RECHARGE : PROVIDED	7435	Internal recharge provided - estates	S - Type1	0.611111						
785100	NON PAY SAVINGS TARGET	5480	Pay savings target	S - type1	0.818182						
800400	CLINICAL DIRECTOR PAYMENTS	5493	Clinical director payments	S - type1	1						

Please email any queries you may have to: it.support@monitor.gov.uk. Please give your message the subject heading: **auto-mapper tool**.

If you have any technical queries, please email the NHS Improvement cost collection team at: nhsi.costcollection@nhs.net.

0300 123 2257 **enquiries@improvement.nhs.uk** **improvement.nhs.uk**

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