

CSV Analysis

PART 1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es					
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
5	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
8																	
9																	
10																	

All of these records belong to Homer Simpson. He has a unique NHS number in column A to identify him.

Let's start with Row 1.

Column B - H will always be the same and can be ignored.

Column I will refer to a "Disease".

Column J will refer to the "Repeat Value" for the disease. "Twelve" means that this Hypertension disease for this patient will repeat every twelve months.

Column K refers to the number of months over which this disease can occur (don't worry about this, as it's not needed for this part of the app).

Column L refers to the data points this disease needs to reference to figure out when the next review is. In this case Hypertension needs to analyse BP and U&Es (which is a type of blood test) to figure out when the next review needs to be.

Column M is empty for hypertension (we'll come back to it).

Column N is where the review month will get inputted by the CSV analysing feature. This is the whole point of this feature - to fill this box in.

Column O references parameters mentioned in Column L.

Column P is the month when the patient had these parameters last checked.

In Row 6 - 7, Column O tells you that Homer had a U&Es check and Column P tells you he had it done in November 2020 and May 2020.

[illegible]

PART 2

The numbers in column P will always refer to a month:

ONE = January

TWO = February

THREE= March

FOUR = April

FIVE = May

SIX = June

SEVEN = July

EIGHT = August

NINE = September

TEN = October

ELEVEN = November

TWELVE = December

The numbers will only ever refer to the current month and the last eleven months. So if we run the reports today (i.e. Jan 2021) then the years are as follows:

ONE = January 2021

TWO = February 2020

THREE = March 2020

FOUR = April 2020

FIVE = May 2020

SIX = JUNE 2020

SEVEN = JULY 2020

EIGHT= August 2020

NINE = September 2020

TEN = October 2020

ELEVEN = November 2020

TWELVE = December 2020

So basically the app has to look at the current month to figure out which Year these numbers reference.

One last example. Let's say we are now in MARCH 2021. The numbers ONE through TWELVE refer to the following months:

ONE = January 2021

TWO = February 2021

THREE = March 2021

FOUR = April 2020

FIVE = May 2020

SIX = June 2020

SEVEN = July 2020

EIGHT = August 2020

NINE = September 2020

TEN = October 2020

ELEVEN = November 2020

TWELVE = December 2020

PART 3

Let's say that Homer now also has developed Asthma:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es		Nov 2021			
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	ASTHMA	TWELVE	TWO	ASTHMA R/V					
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
5	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
8	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
9	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							ASTHMA R/V	NO REVIEW	
10																	
11																	

In Row 2, we can see that Homer has Asthma, that he needs an Asthma R/V every twelve months and that the app needs to look at "ASTHMA R/V" (Row 2, Column L) to figure out when the next review will be.

If we look at Row 9 we can see that there is an "ASTHMA R/V" in Column O and that Column P has a special phrase: "NO REVIEW".

This means that Homer hasn't had an asthma r/v in over twelve months and so should be seen as soon as possible.

The spreadsheet will go through the following steps:

Step 1) The app will identify all rows with the same NHS number in column A.

Step 2) The app will see that Homer has Hypertension and that this disease needs to look at BP and U&Es to analyse when the next review will be. It will also see that Homer has Asthma and this disease needs to look at ASTHMA R/V to analyse when the next review will be.

Step 3) Next it will see that in this case, Rows 3 - 6 refer to BPs, it will see that out of the months referenced in Column P, the LATEST month is ONE (Jan 2021).

Step 4) Then it will see that in this case, Rows 7 - 8 refer to U&Es, it will see that out of the months referenced in Column P, the LATEST month is ELEVEN (Nov 2020).

Step 5) Then it will see that in this case, Row 9 refers to ASTHMA R/V, it will see the key phrase "NO REVIEW" in Column P.

Step 5) Next it will note that as there is a "NO REVIEW" phrase, therefore this patient's reviews are overdue.

Step 6) Finally, as we are in January and as there is a "NO REVIEW" Phrase the app will add "Jan 2021 ASAP" to Row 1, Column N and Row 2, Column N.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es		Jan 2021 ASAP			
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	ASTHMA	TWELVE	TWO	ASTHMA R/V		Jan 2021 ASAP			
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
5	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
8	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
9	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							ASTHMA R/V	NO REVIEW	
10																	

So the app has analysed the data, grouped the diseases together and decided that the patient should be seen as soon as possible (this month).

Just a few more concepts to cover and we're almost there :)

PART 4

Now let's say that Homer has the following conditions:

- Hypertension,
- Coronary Heart Disease (CHD)
- Diabetes
- Heart Failure

Hopefully you can see that the latest BP reading is Jan 2021, the latest U&Es reading is Nov 2020 and the latest HBA1C reading is July 2020.

Out of Jan 2021, Nov 2020 and July 2020, the EARLIEST one of these is July 2020. Then as the value in column J is TWELVE it adds twelve months on to July 2020 and so in Column N the date that is inputted is Jul 2021.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es		Jul 2021			
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	CHD	TWELVE	TWO	BP		Jul 2021			
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	DIABETES	TWELVE	TWO	HBA1C, BP, U&Es		Jul 2021			
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HEART FAILURE	TWELVE	TWO	BP		Jul 2021			
5	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
8	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
9	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
10	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
11	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							HBA1C	SEVEN	
12																	
13																	

PART 5

The app will always pick the lowest value from column J for a given patient. If for example there was a value in column J of SIX then in the above example it would add six months on to Jul 2020 and add "Jan 2021" in Column N:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es		Jan 2021			
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	CHD	TWELVE	TWO	BP		Jan 2021			
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	DIABETES	SIX	TWO	HBA1C, BP, U&Es		Jan 2021			
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HEART FAILURE	TWELVE	TWO	BP		Jan 2021			
5	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
8	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
9	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
10	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
11	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							HBA1C	SEVEN	
12																	
13																	

PART 6

If the calculated date for Column N is before the current month, then the patient needs to be seen ASAP.

If in the above example, there was a value in column J of three, then it would add on three to Jul 2020 = Oct 2020. The app would realise that this review is overdue and so it would enter "Jan 2021 ASAP" into column N:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es		JAN 2021 ASAP			
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	CHD	TWELVE	TWO	BP		JAN 2021 ASAP			
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	DIABETES	SIX	TWO	HBA1C, BP, U&Es		JAN 2021 ASAP			
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HEART FAILURE	THREE	TWO	BP		JAN 2021 ASAP			
5	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
8	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
9	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
10	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
11	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							HBA1C	SEVEN	
12																	
13																	

PART 7

Now the last concept in calculating disease review dates.

This example is exactly the same as Part 4, except now Homer is on a medication called a "DOAC".

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HYPERTENSION	TWELVE	TWO	BP, U&Es		Jul 2021			
2	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	CHD	TWELVE	TWO	BP		Jul 2021			
3	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	DIABETES	TWELVE	TWO	HBA1C, BP, U&Es		Jul 2021			
4	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield	HEART FAILURE	TWELVE	TWO	BP		Jul 2021			
5	4002440613	Mr	Homer	Simpson	Male	12-Oct-90	742	Evergreen Terrace, Springfield	DOAC	SIX	ONE	U&Es	NO SYNC	May 2021			
6	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	EIGHT	
7	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ELEVEN	
8	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	TWELVE	
9	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							BP	ONE	
10	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	ELEVEN	
11	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							U&Es	FIVE	
12	4002440613	Mr	Homer	Simpson	Male	11-Oct-90	742	Evergreen Terrace, Springfield							HBA1C	SEVEN	
13																	
14																	

As you can see, DOAC review date is calculated by looking at U&Es. And please note that in Column M there is a key phrase: "NO SYNC".

So the other medical conditions get synced up and their review date is calculated in the usual way.

However the DOAC does not get synced up - instead it runs on its own rhythm.

The app will simply look at the U&Es and see that the patient has had a U&Es in Nov 2020 and May 2020. It will then pick the LATEST out of these two (Nov 2020) and add on SIX months (as per the value in Column J). It will then input a value of "May 2021" in column N.