

# Creating Apps with AppContentManager

AppContentManager (ACM) is software that enables the easy construction of Apps for learning Welsh that can be delivered on iPhone, Android and the Web.

This manual describes the process of building a language App using ACM, taking the user through the construction of App content and the description of App appearance that is involved in building such an App.

The work was funded by Welsh Government, and the software tools are freely available at <http://appsiaith.com> for anyone who wants to build a Welsh language learning App with the minimum technical knowledge.

The software assumes technical competence in using computers, but does not need the detailed expertise in programming that would normally be needed in order to produce Apps.

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## **1. Introduction**

AppContentManager is intended for the construction of Welsh language learning Apps. It is expected that the learning experience will be broken up into a number of lessons, or units, and each unit will have some mixture of the following five items:

- Patterns (language structures to learn)
- Vocabulary (words to know at this point)
- Grammar (explanations of how the language works)
- Exercises (to reinforce the patterns and vocabulary)
- Longer examples to study (dialogs, darn darllen, postcards, songs etc)

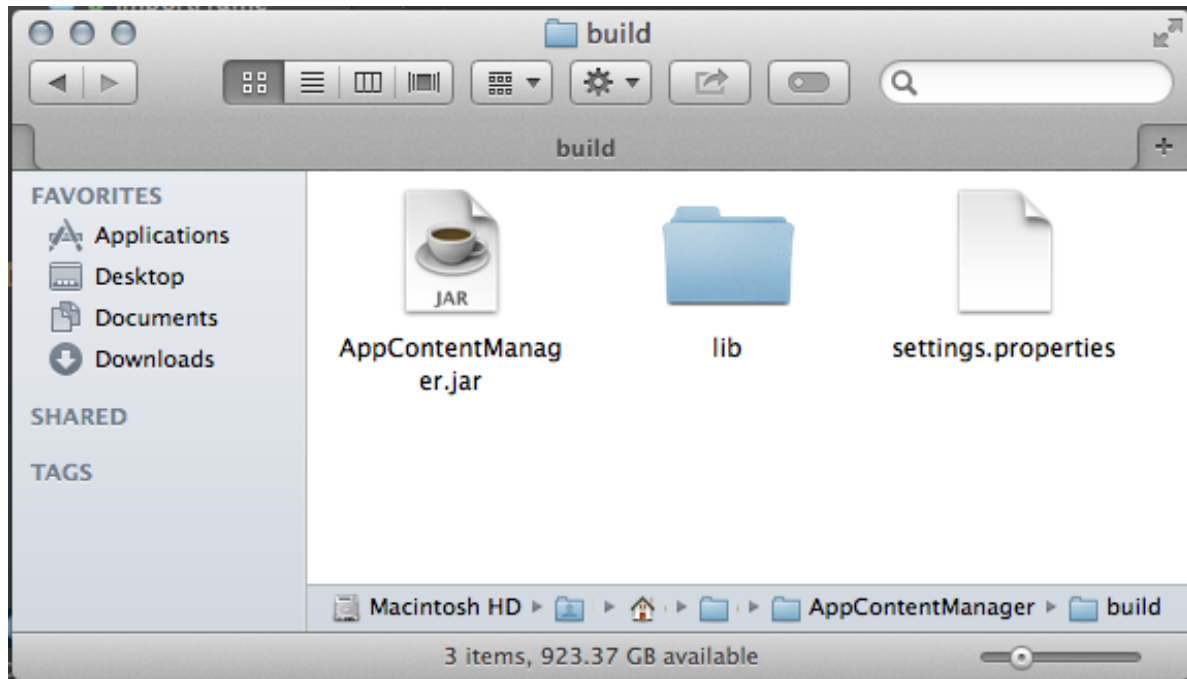
Each lesson does not have all of these, and a specific app may leave out some items altogether (e.g. it may not have any longer examples). However, if your intended structure differs greatly from this structure, then you might be better off building an app from scratch rather than using AppContentManager.

An example App containing material from the first three chapters of Cymraeg i'r Teulu has been built, and gives an idea of the kind of general app structure that can be achieved.

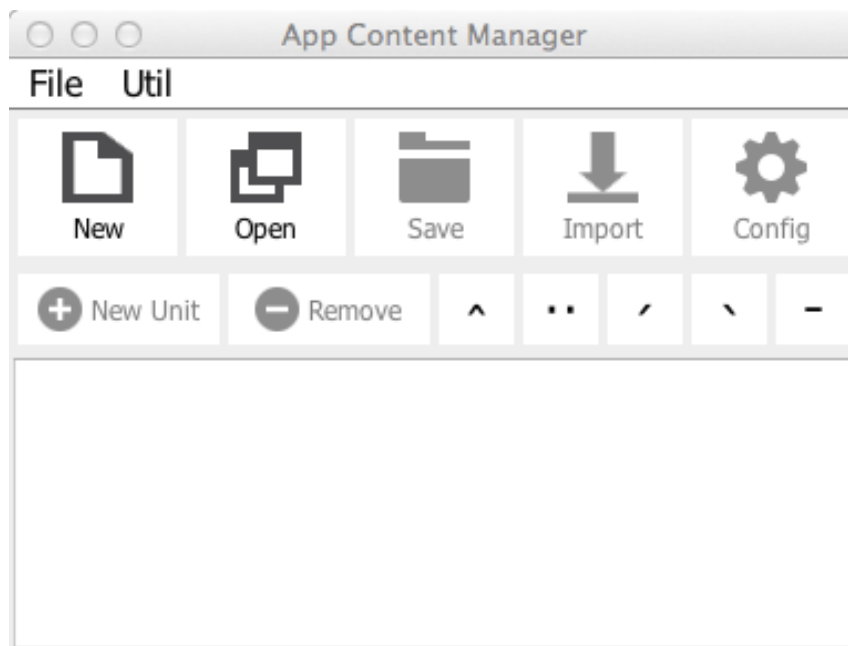
Cymraeg i'r Teulu is a learning scheme from CBAC that includes books and a CD, and both of these were used when making the App. The sound from the CD was integrated with the written material and pictures from the book in order to make an interesting App.

## 2. Starting a new App

You need to download the software to your PC or Mac (see Appendix A). It is contained in a folder called *build*. The software is started by clicking on *AppContentManager.jar* in the build folder.



You should then see the base window of AppContentManager:



If you have previously worked on an App, then the software will open with the details of that App showing. If you want to start a new App, then choose New from the icons at the top of the base window. You should see the following form, but with the two boxes blank:

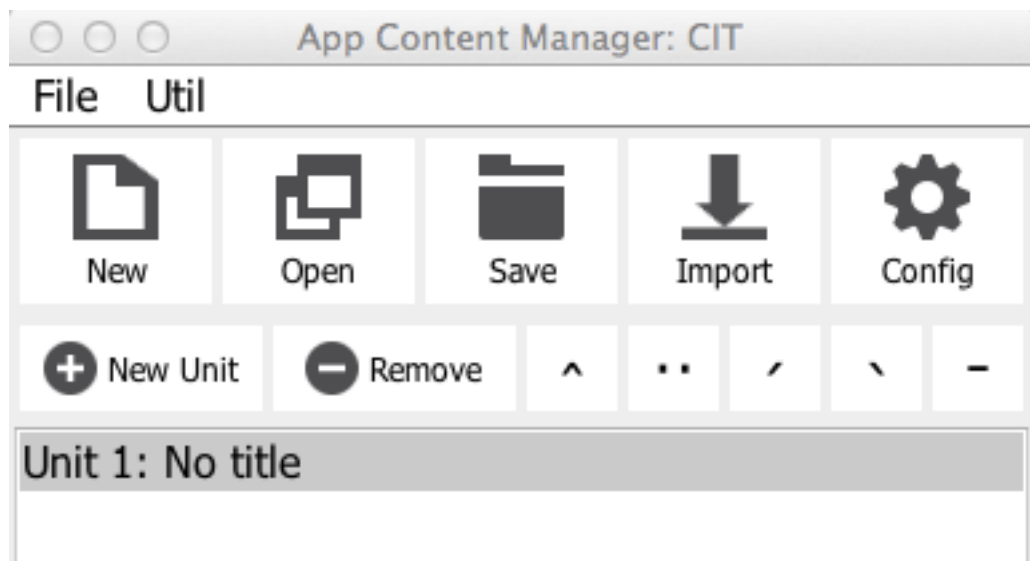
You can type in a Project Name - this is just descriptive, it is not used elsewhere.

To fill in the Project Directory, click on the magnifying glass to the right of the box, this will bring up a file menu. You can choose where in your file structure AppContentManager will store the details of your App - you should make a note of this as you will need to know where it is later on.

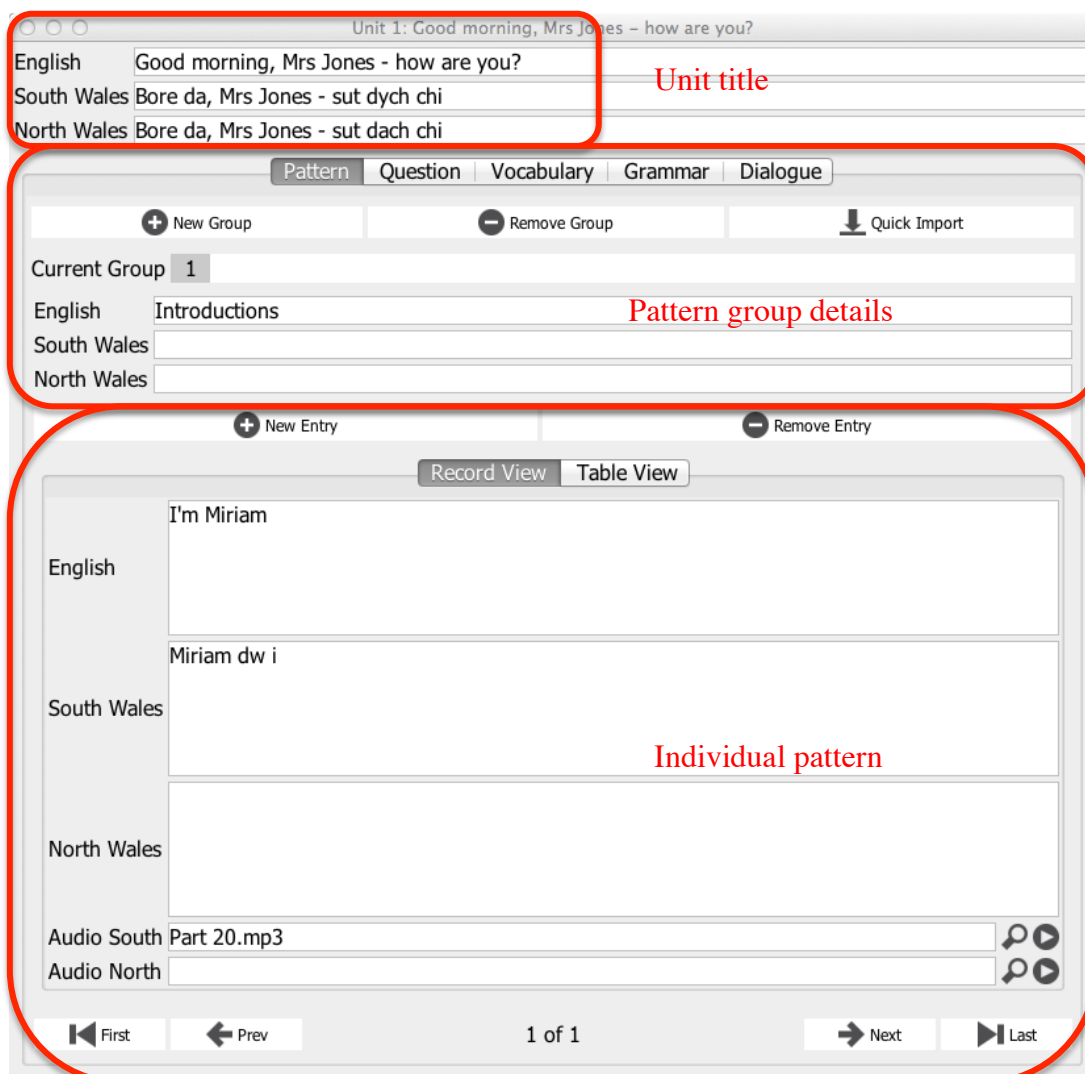
The three plus signs expand out into menus where you can change setting values. For the moment, you should leave all these, as they have sensible defaults. They are all available for later change by pressing the Config button on the base window.

If you press OK, at this point, you will see the word *Empty* has been added to the base window as shown below.

It is empty because no units have been added to the App yet. Clicking on the *New Unit* button will add a lesson as shown below.



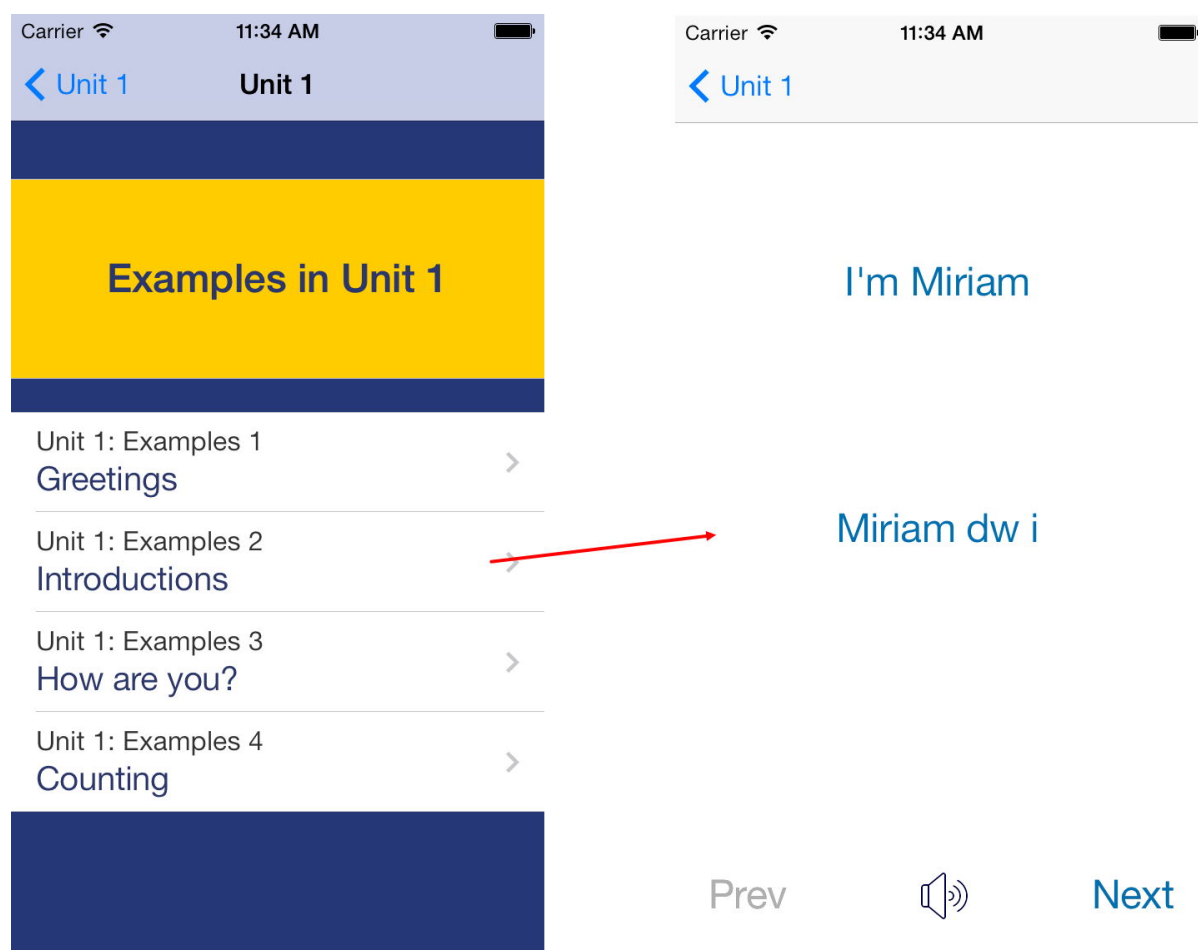
We give the new unit a name and content by double clicking on it. This brings up a second window as shown below.



The top of the window has been filled in with a title for the unit, in both English and Welsh. Because the Welsh can vary between North and South, there are always two boxes for the Welsh. Where it is the same, only fill in the South box. Where there is a difference, also fill in the North box with the variation.

This window can switch between tabs for filling in the five kinds of content that a unit has (patterns, questions, grammar, vocabulary, dialogue) by pressing the appropriate tab just below the unit titles. As shown above, the Pattern tab has been chosen. A unit may have several groups of patterns in it, and in the example shown, New Group has been pressed to create pattern group 1, and it has been given the group name Introductions. A new entry has been added to the group, with English "I am Miriam", Welsh "Miriam dw i", and an audio file has been selected by pressing the magnifying glass to bring up a file selector, and then choosing the audio file containing someone saying "Miriam dw i".

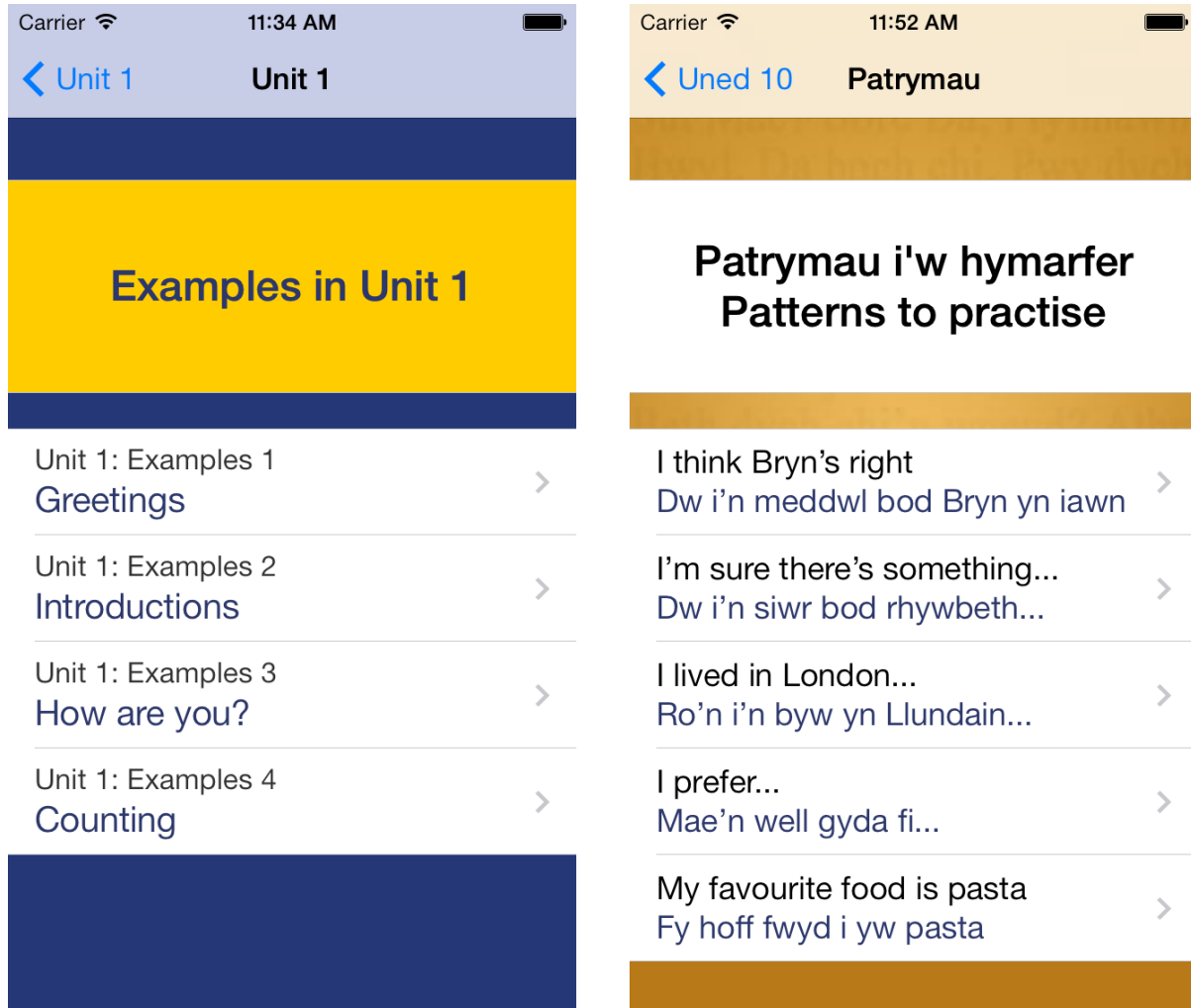
At this point, we have just defined our first pattern screen. Choosing unit 1 in the produced app, and selecting Patterns, and then selecting the pattern group called Introductions will bring up a screen that plays the audio file and shows the English and Welsh phrases for "Miriam dw i" as shown below. As further entries are made in the pattern group, the produced app will cycle through each of them.



This has been a simple example of entering content. The next five sections will give more detail of the choices available for each kind of data, to allow you to make the App you want.

### 3. Patterns

The group details for patterns are used on the pattern group screen like the two examples shown below from different apps.



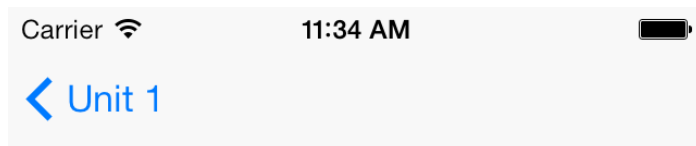
The difference in appearance and the different headers are established later (see section 9 on Appearance). Each entry (e.g. Unit 1: Examples 1, Greetings; and I think Bryn is right, Dw i'n meddwl bod Bryn yn iawn) is taken from the Pattern group titles that you put in.

The first line comes from the English of the title, and the second from the Welsh (South or North depending on which setting the user has chosen, and South always if there is no entry for North).

So, on the left example, "Unit 1: Examples 1" has been entered for English, and "Greetings" for South in order to achieve this effect. The right example has been used more conventionally, with "I think Bryn is right" entered for English, and "Dw i'n meddwl bod Bryn yn iawn" entered for Welsh. The fourth pattern group on the right would probably need to have a North value entered as well, as you would want it to say "Mae'n well gen i" if the App was set to North.



When the user chooses a pattern group, then the individual patterns are shown in order, with the audio being played (if any). If no audio, then the speaker at the bottom (which allows the replay of the audio is crossed out).



I'm Miriam

English from pattern

Miriam dw i

South from Pattern  
(or North if there is  
anything in North and user  
has asked for North)

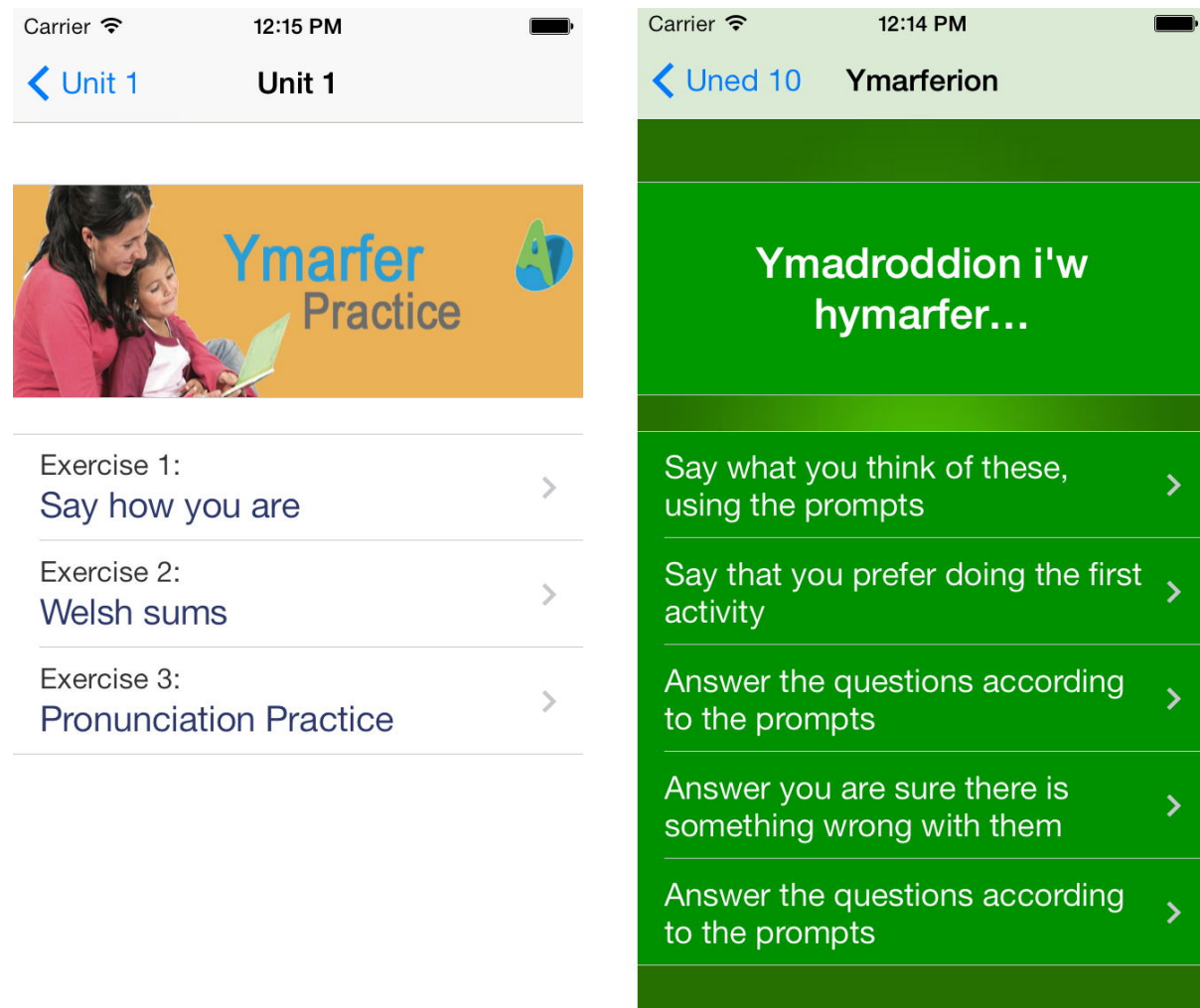
Prev



Next

## 4. Questions

The group details for questions are used in a similar way to those for patterns - they make up a screen that lists all of the question groups in the unit.



In the two examples above, the left example is similar to the left example given for patterns. The right example only has entries for English, and so those entries are shown over several lines.

Questions have a number of items, all of which are optional. They can show a title, a question, an answer, and a picture. They can also play a sound as part of the question and/or as part of the answer.

Typically, within a question group all questions will have a similar form, so you can specify which of the elements exist for a particular question group - the unselected elements are then greyed out for each question in that group, making it easier to only fill in the desired elements.

The example screen shown below describes a question group where each question plays an audio question saying "Sut wyt ti?" when the question appears, and shows a title saying

"Say how you are". It shows you a picture saying how you are ("gweddol"), and when you press answer, it also says "gweddol".

Unit 1: Good morning, Mrs Jones - how are you?

English: Good morning, Mrs Jones - how are you?

South Wales: Bore da, Mrs Jones - sut dych chi

North Wales: Bore da, Mrs Jones - sut dach chi

Pattern | **Question** | Vocabulary | Grammar | Dialogue

+ New Group | - Remove Group | ⚙ Group

Current Group: 1

English: Exercise 1:

South Wales: Say how you are

North Wales:

+ New Entry | - Remove Entry

Record View | Table View

Title: Answer the spoken question using the picture

Question South:

Question North:

Answer South:

Answer North:

Picture: gweddol.jpg

Question Audio South: Part34.mp3

Question Audio North:

Answer Audio South: Part41.mp3

Answer Audio North:

⏮ First | ⏪ Prev | 1 of 1 | ⏩ Next | ⏭ Last

Group Type Setting

☒ Title | ☒ Picture

☐ Question | ☐ Answer

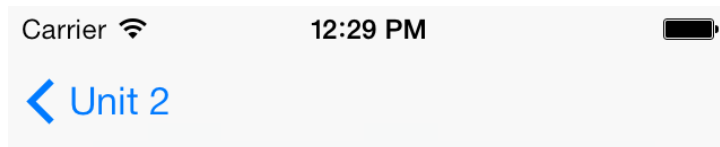
☒ Question Audio | ☒ Answer Audio

✓ OK | ✗ Cancel

gweddol!

Because pictures take up a significant amount of the screen, there is a basic difference between a picture question, and one with no picture. With a picture question, the picture occupies the centre of the screen, with the title and question pushed towards the top. For a non-picture question, the question part is given more of the centre of the screen.

Picture question:



Answer using the picture

Title

Beth wyt ti eisiau i frecwast?

Question



Picture

ŵy

Answer

Prev

Repeat

Answer

Next

## 5. Vocabulary

Vocabulary is fairly simple. While the tool allows you to create several vocabulary groups in each unit, the assumption at the moment is that there will only be one group per lesson, and there is no need to give it a name.

Unit 1: Good morning, Mrs Jones - how are you?

English

South Wales

North Wales

Pattern Question **Vocabulary** Grammar Dialogue

+ New Group - Remove Group Quick Import

Current Group **1**

English

South Wales

North Wales

+ New Entry - Remove Entry

Record View **Table View**

English

South Wales

North Wales

Audio South  🔍 🎧

Audio North  🔍 🎧

Gender  ▼

Word Class  ▼

First Prev 1 of 1 Next Last

This screen shows the addition of the word "milk" to the vocabulary for unit 1. As it has a different Welsh word in the North, both "llaeth" and "llefrith" are filled in, and an audio file for each is supplied. The audio files selected by the user are copied into a store and are renamed to avoid name clashes. The renaming happens when the user presses SAVE on the base window (which they should do regularly).

## 6. Grammar

Each grammar item in a unit has its own group, so you should only make one entry per group.. Only the English entry from the group header is used in the list of grammar entries within the App.

The screenshot shows the AppContentManager interface for Unit 1: Good morning, Mrs Jones – how are you?. At the top, there are three tabs: Pattern, Question, Vocabulary, Grammar (selected), and Dialogue. Below these tabs, there are three buttons: + New Group, - Remove Group, and Quick Import. The current group is 1. Under the current group, there are three input fields for English, South Wales, and North Wales. The English field contains 'Ti and Chi'. Below these fields, there are two buttons: + New Entry and - Remove Entry. At the bottom, there are two tabs: Record View (selected) and Table View. The Record View tab shows a title 'Ti and Chi' and a text area with the following content:

Welsh has two ways of saying 'you'.

**Ti** is used when speaking to one person you are on friendly and familiar terms with, or who is younger than yourself, e.g. a family member, classmate, child or pet.

**Chi** is used when speaking to an adult stranger, to somebody considerably older than yourself, or to somebody of high status such as a headteacher. When speaking to more than one person (child or adult), always use **chi**.

At the bottom of the Record View tab, there are two buttons: Edit and HTML. The HTML button is selected. At the very bottom of the interface, there are navigation buttons: First, Prev, 1 of 1, Next, and Last.

In the entry shown above, we explain how Ti and Chi are used in Welsh. The text can be formatted with headers, bold, etc. It is represented as HTML in the App, and so there is also an option to actually play around with the HTML by pressing the selector at the bottom. If you already have HTML formatted material, you can copy it, choose the HTML tab, and paste it directly in.

## 7. Dialogues

This tab is not well named as it has evolved from a simple dialogue made of a series of entries (where each speaker has an entry in turn), to also encompass other longer pieces of text. There is a "Group Type" button that allows to choose whether it is a real dialogue, or just a monolog (an extended piece of text). The example below shows monolog chosen for a song. The song is entered into a similar HTML editor to the grammar files discussed in the previous section. As there is a recording of the song, that is included as an audio file and can be heard in the App.

The screenshot displays the 'Unit 1: Good morning, Mrs Jones - how are you?' interface. At the top, there are three text fields for 'English', 'South Wales', and 'North Wales'. Below these is a tabbed interface with 'Dialogue' selected. A 'Group Type Setting' dialog box is open, showing 'Monologue' selected over 'Dialogue'. The main area contains a 'Record View' and 'Table View' toggle, followed by a rich text editor with a toolbar. The editor contains the text 'Cân / Song' and 'Tune: Frère Jacques' followed by Welsh lyrics. Below the editor are 'Audio South' and 'Audio North' fields. At the bottom are navigation buttons: 'First', 'Prev', '1 of 1', 'Next', and 'Last'.

Only the English of the group heading is used in the list of available groups.

The screen below shows one entry from a real dialogue. It has a speaker name, a South and North Wales text and audio version. The eventual dialogue has a number of entries, and its final form is shown on the next page.

Unit 1: Good morning, Mrs Jones – how are you?

English

Good morning, Mrs Jones - how are you?

South Wales

Bore da, Mrs Jones - sut dych chi

North Wales

Bore da, Mrs Jones - sut dach chi

Pattern

Question

Vocabulary

Grammar

Dialogue

+ New Group

– Remove Group

⚙ Group Type

⬇ Quick Import

Current Group

1

2

English

South Wales

North Wales

+ New Entry

– Remove Entry

Record View

Table View

Bore da! Miss Willims dw i. Pwy wyt ti?

South Wales

North Wales

Speaker

Athrowes:

Audio South

1\_d2\_1.mp3

🔍▶

Audio North

🔍▶

⏮ First

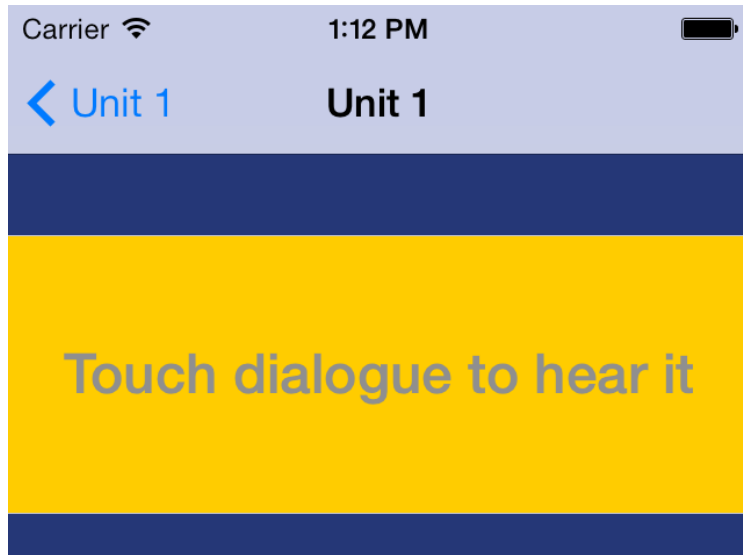
⏪ Prev

1 of 1

⏩ Next

⏭ Last





Athrowes Bore da! Miss Williams  
dw i. Pwy wyt ti?

---

Plentyn Bore da, Miss Williams.  
Gwynfor dw i.

---

Athrowes Sut wyt ti, Gwynfor?

---

Plentyn Da iawn, diolch. A chi?

---

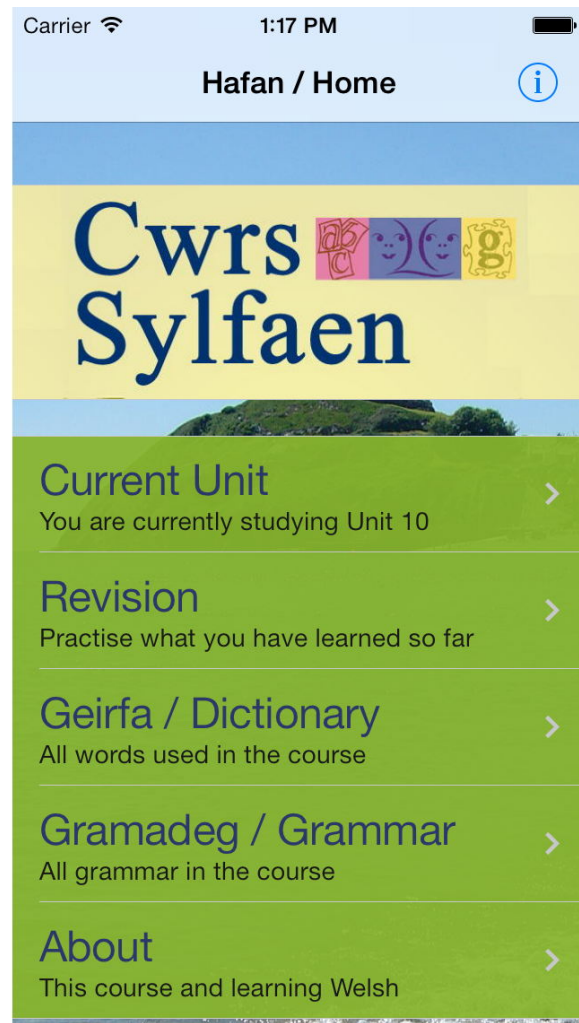
Athrowes Dw i wedi blino!

---

## 8. Top level menus

The top two screens of the produced App have set functions, but the words that are shown can be specified by selecting *Config* from the base menu of AppContentManager, and then selecting Menu Items and filling in the wanted text. Each item in the menu has two pieces of text - the header and the subtext.

Here are two examples of the Main Menu:



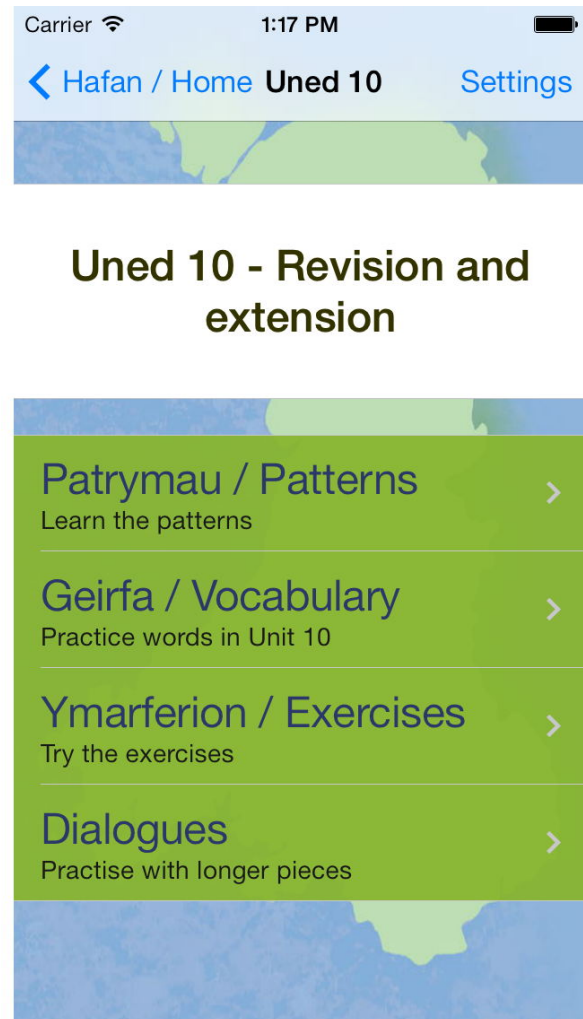
The 5 items in the main menu are:

1. UnitChoice. This takes you to the details of the unit that the user has currently selected. Both examples here are the same, but if you used the term "lessons" rather than units, then you might want the header to read "Present Lesson" for example. The subtext contains the unit number - this is achieved by putting "U1" in the desired string. This is substituted by the unit number presently being studied.

2. Revision. This links to a screen that lets you go through all patterns or all vocabulary that has been learned up to the present unit.

3. GlobalVocab. This links to all vocabulary in all units.
4. GlobalGrammar. This links to all grammar in all units.
5. About. This goes to a series of local / remote web links that are specified under *Useful Information* from *Config*.

The second menu is the Unit choice menu. Examples of it are given below:



This menu also has five items:

1. Patterns. You can see from the two screens shown that some Apps may choose to use a less technical term than Patterns, and this can be done in the unit menu.
2. Unit Vocab. This is the link to just the vocabulary included in this unit. Each of the given examples uses "U1" in its text to mean the current unit.

3. Questions. Again here are two examples (Practice, Exercises) that show the different ways that an App might choose to refer to these things. Another possibility might be to have Welsh headers or subtexts or both.

4. Unit Grammar This is just the grammar introduced in this unit. In the case of the App on the right, this unit has no Grammar, and so that item is not included in the menu for this unit.

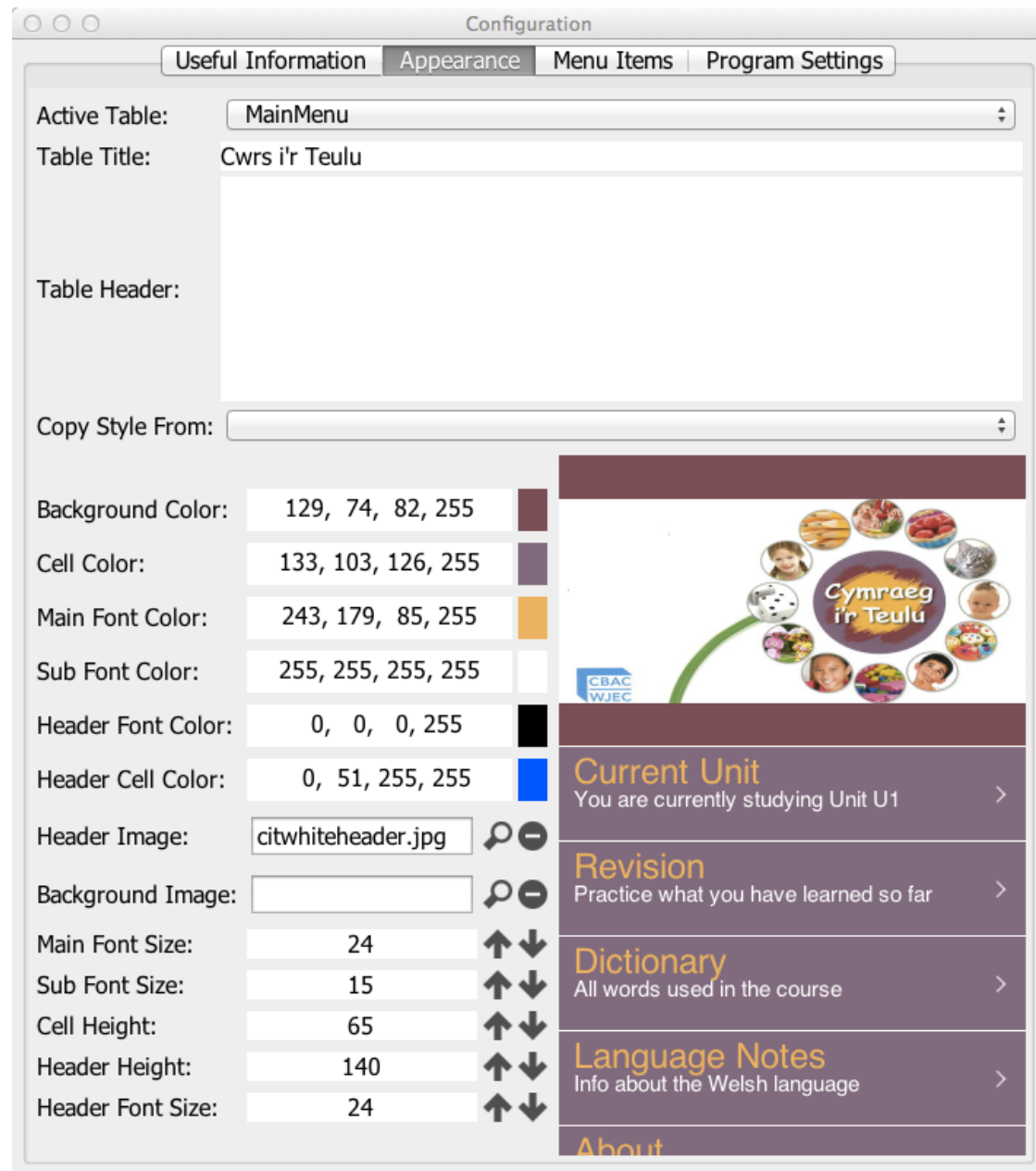
5. Dialogues. The left hand example has a range of material under dialogues, and so chooses to term them "extras", whereas the right hand example only has dialogues and so uses that term.

Here is the full set of menu items that can be changed:

Configuration	
Useful Information   Appearance   <b>Menu Items</b>   Program Settings	
Main Menu 1	Current Unit
Main Menu Sub 1	You are currently studying Unit U1
Main Menu 2	Revision
Main Menu Sub 2	Practice what you have learned so far
Main Menu 3	Dictionary
Main Menu Sub 3	All words used in the course
Main Menu 4	Language Notes
Main Menu Sub 4	Info about the Welsh language
Main Menu 5	About
Main Menu Sub 5	This course and learning Welsh
Unit Menu 1	Examples
Unit Menu Sub 1	How to say things in Welsh
Unit Menu 2	Vocab
Unit Menu Sub 2	Useful words in Unit U1
Unit Menu 3	Practice
Unit Menu Sub 3	Try out what you have learned
Unit Menu 4	Language Notes
Unit Menu Sub 4	Info about the Welsh language
Unit Menu 5	Extras
Unit Menu Sub 5	Dialogues, songs and readings

## 9. Deciding on appearance

AppContentManager also allows the developer to describe how each table in the app should appear, through an Appearance tab under Config, as shown below.



This shows an example of specifying the main menu for the Cymraeg i'r Teulu app. The Table Title appears at the very top of the App for that screen, and the Table Header would appear in the top cell of the table (the white band in this screen). In this case, there is no table header as there is a header image specified instead.

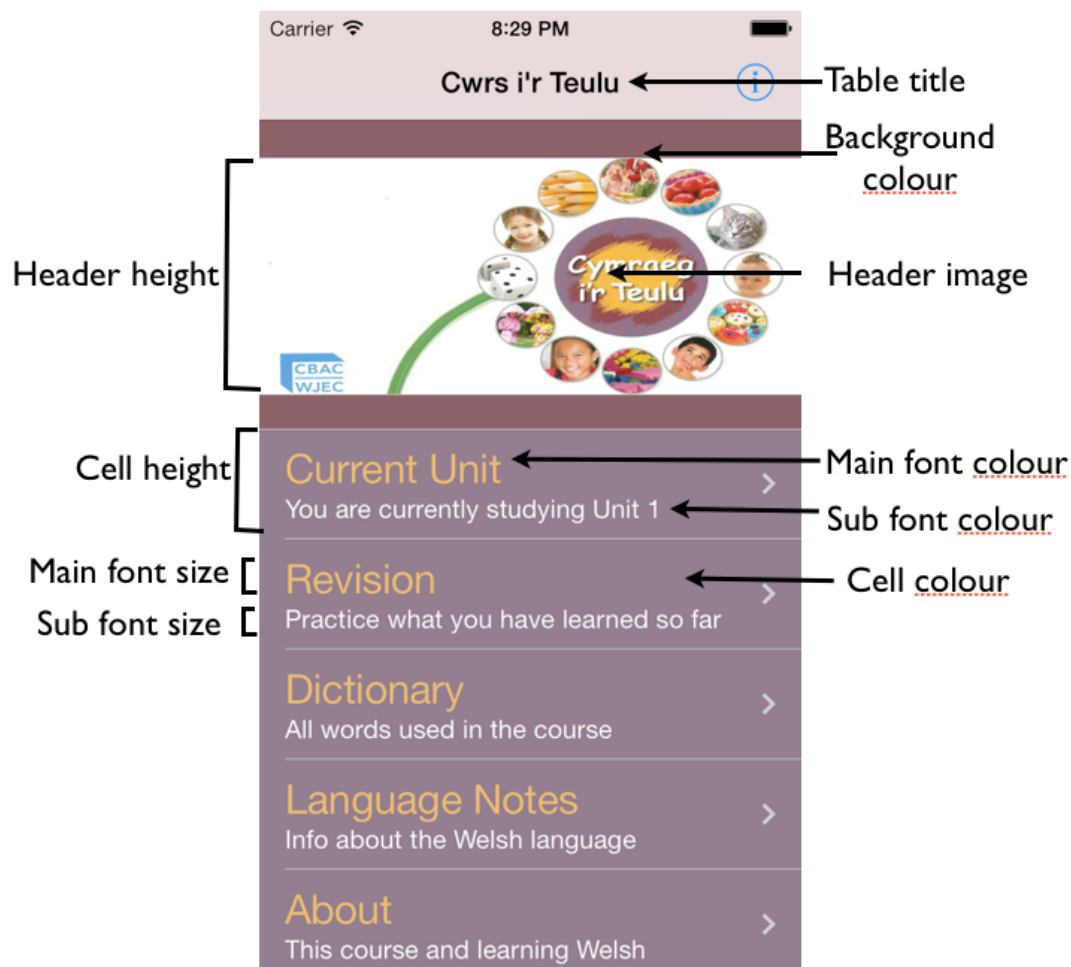
To specify the appearance for a specific screen, the user chooses it as the *Active Table* from a drop-down list of about ten tables. These are the tables we have already discussed (Unit menu, About table, Global Vocab, Unit Grammar) etc. Where two screens share a very

similar appearance (e.g. the Main menu and Unit menu in Cymraeg i'r Teulu), then the *Copy Style* option copies the details from an already set up screen.

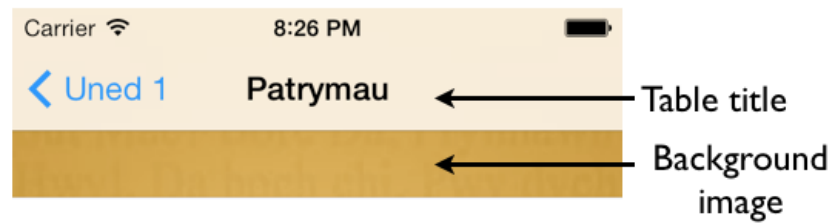
The Config tool gives a rough feedback of how the layout will look in the final app, but it is only a rough approximation. In order to see exactly how it will look, it is necessary to load the config data into a real app.

Here are some examples of how the different options affect the table appearance:

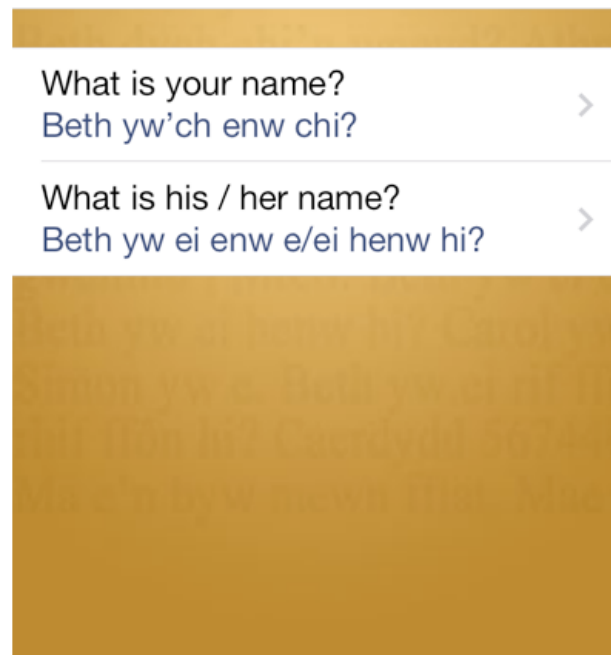
### Appearance example 1 - an image header



## Appearance example 2 - text header and background image



Header font size → [ Patrymau i'w hymarfer  
Patterns to practise ] ← Table Header





## 10. Bulk import

A small App such as Cymraeg i'r Teulu can sensibly be built using the tools above. For larger Apps such as the 30 units of Cwrs Mynediad or Cwrs Sylfaen, it can be more efficient to get all the bulk of the data together in Excel files, and then to import it into AppContentManager.

The most efficient way to do this is have column headers that match the database fields (specified in Appendix B for each of the five main tables), and fill in the data for each record. Here is what this might look for in the case of the vocabulary table for Cwrs Sylfaen.

lessonId	south	north	english	audioSouth	audioNorth	gender	wordClass
4	ardal		area	4036		f	n
4	cwrdd (â)	cyfarfod	meet	4037	N4037		v
4	cyfoethog		rich	4038			adj
4	cyrraedd		arrive	4039			v
4	dechrau		start	4040			v
4	dewis		choose	4041			v
4	digon		enough	4042			adj
4	dod yn ôl	dŵad yn ôl	come back	4043	N4043		v
4	enwog		famous	4044			adj
4	erioed		ever/never	4045			adv
4	ers		since	4046			conj
4	gadael		leave	4047			v
4	gorffen		finish	4048			v

In this case, all of the audio files have been named, and the names specified. As the importer does not know where these files are, they have to be copied into the *audio* folder in the App data folder by hand afterwards. Another possibility would have been not to specify the audio filenames in the Excel file, and to add the audio files later using AppContentManager.

If you make Excel spreadsheets for each of the five tables, then you can make a *New* database, and import all the data at once.

Configure Source Files

Pattern

Question

Vocabulary

Grammar

Dialogue

Delimiter  Encoding  ☒ Contain Headers

Next



Having chosen all of the files containing the imports, pressing *Next* on the above screen gets a dialogue like the one below:

**Match Headers**

**If the input isn't displaying properly (strange characters), try to select an alternative encoding in the previous step.**

	unitId	groupId	south	north
Pattern	unitId	grouping	south	north
	english	audioSouth	AudioNorth	
	english	audioSo...	audioN...	
Question	id	lessonId	exerciseId	title
	questionSouth	questionNorth	questionAudio...	questionAudio...
	questio...	questio...	questio...	questio...
	answerSouth	answerNorth	answerAudioS...	answerAudioN...
	answer...	answer...	answer...	answer...
	id	lessonId	south	north
Vocabulary	english	audioSouth	audioNorth	gender
	english	audioSo...	audioN...	gender
	wordClass			
	wordClass			

← Back      Next →

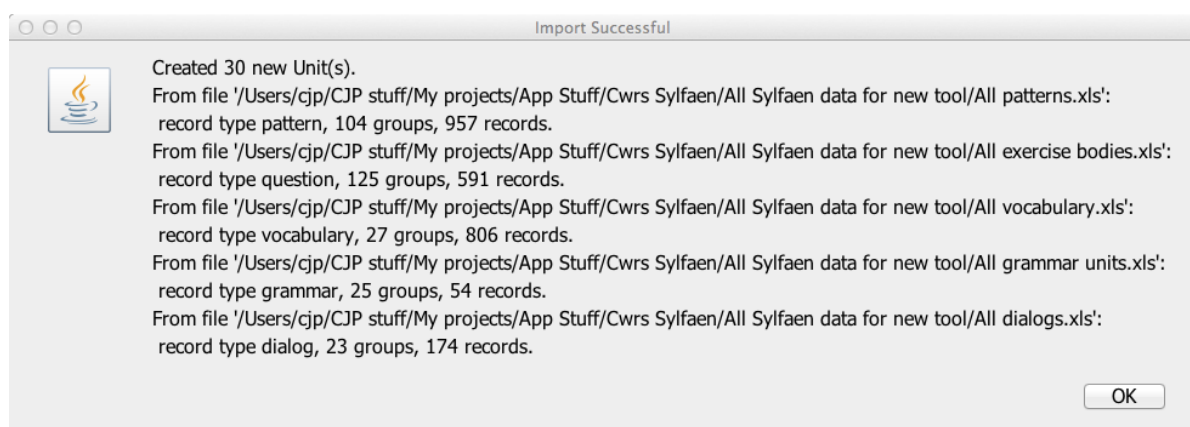
Where the fields have the right names, the tool suggests mappings onto the database. Where the name is different, the tool will leave the field name blank, and the user can choose which fields in the Excel file to map onto which in the database. A case of this above is that the Question has a lessonId field - this needs to be mapped onto unitId.

In two cases above, the id field is left blank - there is a numbering field in the Excel data that is not needed by AppContentManager.

In the case of Cwrs Sylfaen, pressing Next at this point gets the screen below. This says that there was 30 units worth of material, and our database has not yet created any units, so do we want to create 30 new units? If there were existing units, then we could choose which units to match with each UnitId.



As we are happy, we just press *Import*, and get the following message:



The created units will need to be given names, and group headers need to be inserted, but this is a great way to get a lot of data into the tool efficiently. It also means that the bulk of data entry can be done in Excel - a tool with which many people are familiar.

## **Appendix A - Getting AppContentManager**

During the initial usage of AppContentManager, we will be installing the software on people's computers for them.

We have set up GitHub repositories for each of the tools, and the software can also be downloaded from there.

Links to the repositories will be on the support web site at <http://appsiaith.com>, and there will be instructions there on installation.

## Appendix B - Data fields for the five main tables

Section 10 discussed the import of large amounts of data from Excel. In order to do so, it is necessary to know the fields in each of the five major records (patterns, questions, vocab, grammar and dialogues).

### *Pattern fields:*

unitId - Integer: the number of the unit that this pattern is part of.  
groupId - Integer: the number of the group within the unit (first group is 1, etc).  
english - Text: the English phrase  
south - Text: the South Wales Welsh phrase  
north - Text: the North Wales Welsh phrase (blank if same as south)  
audioSouth - Text: the filename for the mp3 audio recording of the Welsh phrase  
audioNorth - Text: the filename for the audio recording of the North phrase if different

### *Question fields:*

unitId - Integer: the number of the unit that this question is part of.  
groupId - Integer: the number of the group within the unit (first group is 1, etc).  
title - Text: a header for the question, used to set the scene  
picture - Text: the filename of the jpg picture to show with the question (blank if none)  
questionSouth - Text: the South Wales Welsh question (blank if no text)  
questionNorth - Text: the North Wales Welsh question (blank if same as south)  
questionAudioSouth - Text: the filename for the audio recording of the question  
questionAudioNorth - Text: the filename for the North audio recording if different  
answerSouth - Text: the South Wales Welsh answer (blank if no text)  
answerNorth - Text: the North Wales Welsh answer (blank if same as south)  
answerAudioSouth - Text: the filename for the audio recording of the answer (blank if none)  
answerAudioNorth - Text: the filename for the North audio recording if different

### *Vocabulary fields:*

unitId - Integer: the number of the unit that this word is part of.  
english - Text: the English word  
south - Text: the South Wales Welsh word  
north - Text: the North Wales Welsh word (blank if same as south)  
audioSouth - Text: the filename for the mp3 audio of the Welsh word (blank if none)  
audioNorth - Text: the filename for the audio recording of the North word if different  
gender - Text: "m" if masculine noun, "f" if feminine noun else blank  
wordclass - Text: "noun", or "verb" or "other"

### *Grammar fields:*

unitId - Integer: the number of the unit that this piece of grammar is part of.  
title: Text: a header for the grammar  
html: Text: the html for displaying on the screen about the grammar

*Dialog fields:*

unitId - Integer: the number of the unit that this question is part of.

groupId - Integer: the number of the group within the unit (first group is 1, etc).

speaker: Text: blank if a monolog, speaker name if a dialogue

south - Text: if a dialog, one piece of dialog text; html content if a monolog

north - Text: northern version or blank if same as south

audioSouth - Text: the filename for the mp3 audio of the Welsh

audioNorth - Text: the filename for the audio recording of the North if different

## **DOCUMENT HISTORY**

<i>Version</i>	<i>Date</i>	<i>Changes made to document</i>	<i>Changed by</i>
0.2	19/03/14	First complete version	CJP