**Time Log**

**Project:** Conversational interaction with Amazon Alexa Skills

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**Week 1**

**29/09/20**

* 1.5 hours - Read all of the project guidance notes on Moodle & created a [document of all tasks I had to complete](https://docs.google.com/document/d/1zUTL7CalyBCvGgAJHf6CSdK9zWQMw_qpEEa9awYf2o0/edit).
* 1 hour - Skim read over [Alexa Skills Kit developer document](https://developer.amazon.com/en-US/docs/alexa/alexa-design/get-started.html).
* 0.5 hours - Created an Amazon developer account.
* 0.5 hours - Watched the first interactive video in the [Amazon Zero to Hero course](https://developer.amazon.com/en-GB/blogs/alexa/alexa-skills-kit/2020/02/introducing-zero-to-hero-a-comprehensive-course-to-building-an-alexa-skill) to get some background knowledge about Alexa and put the information into a [word document](https://docs.google.com/document/d/13Ia-4GPoFi_MlZbwBOGN7FODDnNXDV6T0pSwPb53pZg/edit).

**02/10/20**

* 0.5 hours - Created [time log document](https://docs.google.com/document/d/1FG4R-1dX0vWywu9zmX7zBf35R1fWyS_dgF43sPFCe9A/edit).
* 0.5 hours - Created a [meeting template](https://docs.google.com/document/d/1yuxAT-g5ghU-PEFSSzhbxwhEX_CF-VMr3EQjmKuJ_zs/edit).
* 0.5 hours - Looked at past projects (Hall of fame from Moodle).
* 1 hours - Read about the [Alexa Skills Kit](https://developer.amazon.com/en-US/alexa/alexa-skills-kit?) & started the [Alexa Beginner Dev course](https://developer.amazon.com/en-US/alexa/alexa-skills-kit/get-deeper/tutorials-code-samples/build-an-engaging-alexa-skill).

**Week 2**

**06/10/20**

* 2 hours - Created a cake time skill from the Alexa Beginner Dev course. I had issues with this as my skill wouldn’t open when saying “Open Cake Time”. I quickly realised this was due to not building the app correctly before trying to test it. I also added to cake time using slots and intent handlers and used Amazon S3 to save and read data. I then finalized the skill, submitted and published it for review.
* 0.5 hours - I have kept a [document of the tutorials](https://docs.google.com/document/d/13Ia-4GPoFi_MlZbwBOGN7FODDnNXDV6T0pSwPb53pZg/edit) so I can refer back to them in future if I need some help.
* 0.5 hours - I created a [list of questions](https://docs.google.com/document/d/1FJl1Wzmi-V3lFGw0L12wbF7OCDYSG8k0T870QDAKW9Q/edit) that I will ask at the first meeting with my adviser tomorrow so that I can gather requirements.

**07/10/20**

* 0.5 hours - Had my first meeting with my adviser today and I explained that I have done background reading about Alexa as I wasn’t sure if she had chosen a project or if it was up to myself to decide. For next week, I will come up with a few different ideas for the project. I then added this information to the [meeting minutes file](https://docs.google.com/document/d/1yuxAT-g5ghU-PEFSSzhbxwhEX_CF-VMr3EQjmKuJ_zs/edit?usp=drive_web&ouid=107314356594684808233).

**08/10/20**

* 1 hour - Researched on Google and informally spoke to close friends and family about types of things they would like to be able to do using Alexa and I collated a list of possible ideas that I have to refine further.

**09/10/20**

* 0.5 hours - I have looked at a range of options for types of apps I could create with Alexa. These included a 10 minute workout program; a skill that allows you to ask Alexa for news and information about a specific subject and also a trivia/pub quiz game. However, I have decided to opt for the [fitness app](https://docs.google.com/document/d/1U8IFIWJpHhI-KISn0TPGqZi1xc74vBYaKHkEn6Omkss/edit) as I believe it is the app that has the most purpose and can be very useful for helping to keep people’s mental and physical health in good shape, especially during these unprecedented times where we are experiencing local lockdowns.
* 2 hours - I have created a requirement specification document for the project highlighting a description of the application, functional and non-functional requirements as well as [user stories](https://docs.google.com/document/d/19Qvl4QKNXdctCs4GY1qGpnCwo0E1w6bQfigU1Mf2qZY/edit) and design layouts. I have only managed to complete half of this document so I will complete the other half tomorrow after I finish work.

**11/10/20**

* 1 hour - Tonight, I have continued with working on the requirement specification document. Tomorrow after my lecture I will finish this document and create diagrams showing the flow of conversion between Alexa and users.
* 1 hour - I have created a [gantt chart](https://docs.google.com/spreadsheets/d/1SC1eZxjWnJSZVT1PoILXaASZE4wYFy4fwm6q8FxgrME/edit#gid=0) to help me plan for the rest of the project. In this, I have decided to work in 3 week sprints to allow myself time to reflect and re-evaluate after each sprint. By choosing 3 weeks, it means that I will have 4 sprints taking me up to the 4th of January 2021. This is the point where I want to have a fully functional app so that I can focus a lot on the dissertation in semester 2 as I have taken 70 credits of courses next semester.

**Week 3**

**12/10/20**

* 1.5 hours - I have added to the requirements specification document, specifying and refining all of the system requirements and external interface requirements.
* 1 hour - I have researched online and watched many of Amazon’s [videos](https://www.youtube.com/watch?v=b5Tzcva30Mw&list=PL2KJmkHeYQTPYNVrT57Hn3faO-hmgGW_D&index=1) around the topic of designing for voice input devices. I have also read different types of Amazon’s documentation including [Designing for Conversation](https://developer.amazon.com/ask-resources/guided/conversational-design-workshop/#/lessons/gDcQVF9nOFOtNljrELzARIGN4HuD7LNh).
* 1.5 hours - I created [happy path script](https://docs.google.com/document/d/1jLRBwANebH1wyqvTJesJR7OH0JJmFSTrjDdEP7l7vVo/edit) examples showing the flow of conversation between a user and Alexa for all possible sessions.

**13/10/20**

* 1 hour - Today, I used an online issue tracker called ClickUp to create an [issue tracker log](https://share.clickup.com/l/h/2guhv-85/9d0ec8eb1d94cd9) and [gantt chart](https://share.clickup.com/g/h/5-15122165-7/493c023d204433e). This shows a breakdown of all the tasks I must complete for each 3 week sprint as well as start dates and end dates.

**14/10/20**

* 0.5 hours - I had my weekly meeting with my adviser today, we discussed the plan for the project, my ideas on features to add into the project. From this meeting, I realised that I need to investigate the back-end functionality a lot more so that I understand how to integrate this to the app.

**17/10/20**

* 1.5 hours - I have researched online, watched videos and created a [document](https://docs.google.com/document/d/1hJhA96VaCHtPMV2P_KiJonnZ5Kfs9m7wF2n26fNXXEo/edit) about how to incorporate the back-end functionality with Alexa Skills Kit. I am going to use Dynamodb to store tables where I will keep the users’ data, favourite workouts etc.
* 2 hours - I started to create a base structure for the app and linked it to the back-end using AWS. This allows the user to open the app using invocation “open intent workout”. This name may be changed at a later date. The app also has intents to meditate and allows users to choose from bird sounds etc. This is not implemented properly as the response from Alexa is not validated.
* I didn’t have enough time to look online for resources I can use for the workouts and the meditation, so I will do this tomorrow after work.

**18/10/20**

* 1.5 hours - I managed to find a variety of different workouts (at different intensity levels), as well as royalty free sound for relaxing and guided meditation. I have collated all this information with links to royalty free clips into a single [document](https://docs.google.com/document/d/1WPkAgr1OVTWjozD8nq1H6e3hoduY43Kj/edit).
* 2 hours - I thought more about how I need to structure the database and I have created the database schema and example tables showing how tables and user data is related. I also found out that if I want to store the user’s name from their Amazon profile, I need to ensure I have a privacy policy and that the user gives permission for this when they enable the skill in the Alexa app.

**Week 4**

**19/10/20**

* 2 hours - I found all of the[audio files](https://drive.google.com/drive/folders/1SleDmBwt4gD2Nv7M1e-zSB8ZKkC4Hyp8)that I need for the meditation section of the app on royalty free websites, including the guided meditation/breathing and peaceful sounds. I ensured that these audios were available for commercial and non-commercial use. I then converted these audio files so that they are all in an mp3 format. I then merged the audios so that they will look for 10 minutes (or as close as possible).

**20/10/20**

* 1.5 hour - I have managed to create a [spreadsheet](https://docs.google.com/spreadsheets/d/1FwmgWi0UEmipJiNa9kPR5JodWQc-mnfS/edit#gid=1473645852) for each workout. I have 2 different types of workouts for upper, lower and full body areas. I have also included warm ups and cool downs for each of these workouts.

**21/10/20**

* 1 hour - I have decided to change the way that I look at intensity level for the workouts. I am now using 30 secs rest between each workout for light intensity, 20 secs for moderate and 15 secs for vigorous. I am unsure if this will be too intense so will need to test these workouts by trying them out myself to see how long each workout will take. The original plan of having different exercises for different intensity levels seems very tricky to do just now, I will start with this new basic plan and then make any adjustments if needed.
* 1 hour - I have created a document with all the information I need to be able to get the [database](https://docs.google.com/document/d/1hM7TdIq67wgzWryroejKDYpYDPi2awy4/edit) up and running. This document contains a checklist of all things that the database must be able to store and retrieve as well as some tips for getting the database set up. My plan is to have the application front end working using the alexa hosted database and once I have a solid front end system, I will then scale it to include my database on AWS.

**23/10/20**

* 0.5 hours - I updated the gantt chart and issue tracker, closing issues that I’ve completed.
* 1.5 hours - I started to program the welcome screen for the user and allow the user to choose a mode. However, I had used a code template for this and I’ve confused myself too much. As I am not far into the project, I have decided to create a new skill and restart the process. This should only take an additional few hours to get back to where I need to be.

**25/10/20**

* 2 hours - I started a new skill in the Alexa developer console and rebuilt the app from the beginning so that I could work out where I had gone wrong. I realised that I was not calling the request handler correctly each time. I am now back up to speed and the app welcomes the user, recognises if users wish to workout or meditate and also allows them to choose sounds to listen to. This doesn't flow as I would like as you can choose to play a song when in workout mode - I have seen online that you can use intent chaining to solve this issue so I am going to look into that more.

**Week 5**

**26/10/20**

* 1 hour - I added functionality to turn the single utterances into a multi-turn dialog. This now allows the user to choose either workout mode or meditation mode. Alexa also validates the user’s input if the slot is not identified. For example, if a user says “relax me”, Alexa then re-prompts the user saying they can either workout or meditate. This should prompt the user to use the words workout or meditate. This is very limited just now as I have not added any synonyms to the slots, however, this is something that I will add at the end of the project so that it gives the app a greater conversational flow.
* 0.5 hours - I have added information into the help intent to give the user a general overview of what the app can do - This has still to be enhanced with allowing the user to get information on each individual exercise. I will add this once I have more functionality in the app. So, I have added this to the backlog.
* 0.5 hours - I also updated the gantt chart on Clickup and moved the task 'Show Different Welcome Screen for Existing Users' to the backlog as I have looked online and I need to use many different things to help with persistence and integrate it into the DynamoDB database. I don't believe this function is too important just now so will work on adding more functionality before adding on the extras to make the user experience better.

**28/10/20**

* 0.5 hours - I had my weekly meeting with Dr Foster and I walked through everything I have done over the last 2 weeks, explaining my thought process for delaying /changing certain parts of the app so that I could prioritise functionality over user experience just now. We spoke about the way the app is coming together and how I am focusing on getting the meditation section fully functioning before focusing on the workout and database section.

**29/10/20**

* 3 hours - I tried many different things to get my application to play audio. First, I tried using SSML however I realised there was a limit on the length of the file so I couldn't do that. I have also tried the AudioPlayer Interface, however, when storing the audio files in the s3 media manager, when I reference it in my code, I am getting an error saying "I am having trouble connecting to the audio file URI. I then wondered if I could host the audio file on Youtube and reference it through the AudioPlayer Interface and I could not get this to work. I then tried to use an online test streaming url and I was able to get the audio to play. However, I am not sure how to host the mp3 file online free of charge.

**30/10/20**

* 2 hours - I spend another couple of hours looking online at how to create an Alexa skill to stream my mp3 files. I used many different sites to try streaming this but it wouldn’t work. However, I found a media hosting site called MediaFire where I can host the mp3 files and reference the .mp3 download url in my source code and it will play when the skill is opened. I now need to focus on integrating this application with my own workout application.

**31/10/20**

* 2 hours - I have cleaned my code and managed to get the application to play a sound from the MediaFire url when the user requests to listen to a sound. Currently, there is no validation so if a user asks to workout and then says the phrase “birds” or something similar, it will play this sound. So, I need to ensure I validate the user input so that this doesn’t happen. Also, when I ask Alexa to stop, the music continues to play so I need to fix this. Finally, I need to play a sound which matches the users request. For example, if a user says they want to listen to birds, then a random song plays just now. I may have to split this into different intents to get this to play for each phrase.
* 2 hours - Later on tonight, I managed to get a sound to play at the users request, for example, if a user said “birds”, it would play bird sounds or if they said “river”, it would play river sounds. I have also implemented a function which allows a user to say “random”, when this happens, a random number will be chosen between 0 and 16 (as there is 17 sounds) and then the program looks through the array of available sounds for the sound at the position chosen by the random number and then plays that sound. Again, I still have issues if validation as Alexa begins playing the sound but continues to wait for input from the user. The app also doesn’t stop playing the sound when you ask Alexa to stop or cancel.
* 1 hour - I also managed to integrate the guided breathing sessions in a similar way as a user can also request “breathing”, “breathing 1” or “breathing 2” as a sound and it will play the guided breathing session relating to that audio. This is not the way that I would like to present the options to the user but I will change this later as I just wanted the functionality of the program to work.

**Week 6**

**02/11/20**

* 2 hours - I have nearly finished the meditation and guided breathing sections of the app. I managed to get the app to now choose at random, out of the various files, a sound that matches the user's request. For example, if a user says birds, the app will choose a bird sound file at random out of all the corresponding bird files - This makes it more likely that user’s won’t be listening to the same sounds all the time. I also did a similar thing for the guided breathing session, so if a user enters that mode, they get a guided breathing session at random.
* 0.5 hours - I cleaned the code and Alexa’s responses to provide for a more natural flow of conversation.
* 1 hour - I fixed the bug which caused Alexa to continue to wait for input after a user had already made a request as well as fixing a bug which meant that the music kept playing even after the user had said “Alexa stop”.
* 1.5 hours - I tested all the user input and validations, cross referencing it with the possible slots and have been trying to fix other bugs that have appeared but I have not been able to do this so I have added these to my issue tracker and gantt chart as well as closing other tasks that i’ve completed. The bugs are:
  + There should be direct paths, when in workout mode, you shouldn't be allowed to say "rain" etc.
  + When you say ‘meditate’ and then ask for ‘dog’ as a sound (or sound that doesn't exist in files), it repeats the meditation unwind script, if you say dog again, the skill stops and doesn't do anything.
  + Random error occurring sometimes - Sorry, your skill got this error. Cannot read property 'metadata' of undefined. This happens when you say: guided breathing/breathing, rain and chill/chilled

**03/11/20**

* 1 hour - I have implemented functionality which allows Alexa to give a custom goodbye and say a healthy tip/quote when a user invokes the stop or cancel intent. I would like to add this to my custom intent so that it happens when the audio clip stops playing. Currently, I have an array of 25 quotes and the app will choose one at random to say at the end of the session.
* 1.5 hours - I tried to get the app to allow users to set up daily reminders. I have managed to get this to work on an offset (send the reminder in 30 seconds time) but I can’t get it to send a reminder for a specified time (9am everyday).

**04/11/20**

* 1 hour - I had my weekly meeting with my adviser and updated the meetings document. We discussed my progress over the last week and I showed a live demonstration of the app. This included some of the bugs that I’ve encountered. We spoke about what I should do after the meditation section and bugs are finished and decided I should start getting the database and things organised as that is the next big section I need to move onto.

**05/11/20**

* 1 hour - I found royalty free relaxing images relating to the meditation and guided breathing sessions online and converted them to JPEG so that I could host them on MediaFire and reference them in my code.
* 1.5 hours - I updated the metadata of the code so that when the user requests to play different sounds, the images will show with a title and subtitle on their devices if capable of visual output. For example, if a user plays bird sounds, a peaceful forest setting with an Artwork image shows, or, if they request to do mountain meditation, peaceful mountain images are displayed.
* 1 hour - I tested all of the images on my fire tv device and they all displayed correctly. However, the background images are very fuzzy so I need to fix the resolution. I also realised that the random numbers aren’t generating correctly so I need to check why this is so that users can access all the audio files. I have added this to the issue tracker.

**06/11/20**

* 2 hours - I now have the reminders working. This will not schedule a reminder at the user’s requested time but if the user wishes to schedule a reminder, it will send them a reminder at the same time the next day (24 hours later). This is only invoked when you say “Alexa, remind me” or “Alexa, remind me to exercise with Intent Fitness”. The user is also only made aware of this feature when they say stop or cancel just now so I also need this to be added to the end of the getSounds feature.

**09/11/20**

* 1 hour - I have been able to host all the files on Dropbox which has permanent links so I have updated all the links in the code
* 0.5 hours - I have added to the help section so that Alexa reprompts users and then invokes another intent.
* 0.5 hours - I have updated all the background images but they have now stopped appearing on the visual output devices (even though the art work images are showing). This seems to be due to cache needing to be cleared so I will leave this a few days and let it clear on its own
* 0.5 hours - I have decided to remove the functionality to have background music playing when the user is working out as I feel as though it would complicate the workout routine and also add confusion for the user when trying to use the feature.
* 1 hour - I have fixed all the bugs on the meditation/guided breathing sections so I will now move onto the workout section.

**11/11/20**

* 0.5 hours - I updated the way that the skill looks like on the alexa skills app and I also updated the skill’s logo
* 0.5 hours - I had my weekly meeting with my adviser and we spoke about the progress I had made in the last week, as I now have a permanent website to host the files, have fixed the bugs, got images to display if you’re using a visual output device and allows users to set reminders to workout/meditate. I also said I am working on getting the workouts to display to the user as I have now implemented functionality to allow users to choose target body areas and intensity levels. I should have a video produced for next week to show the app’s functionality.
* 1 hour - I have implemented intents to allow users to target either upper, lower or full body and also implemented an intent to allow them to choose either light, moderate or intense workouts.
* 2 hour - I have created an array which holds each exercise and their description, Alexa now speaks out this description and allows the user to complete a single exercise. There was no output when the user was completing the exercise and I wasn’t able to get alexa to stay active whilst the exercise was being completed. So, I decided to find copyright free workout music to play during the time when the user is completing an exercise, this will also show images if the user has a visual output display. Now, I have to figure out how to get Alexa to explain the second workout after the first one has been completed. The use of intensity levels also aren’t used as the user would have to pause for a different length of time each workout so I need to figure out how to incorporate that into the app.

**13/11/20**

* 5 hours - Today, I found out that ASK only allows you to play a single audio file and then it will end the session which means Alexa can't speak after the music file has finished playing. To work around this, I have decided to create a basic skill so that Alexa can read out the information I require, I then made around 30 audio clips in total for all 3 workouts and then stitched them together with the workout music. Once I had done this, I ensured that each of the clips flowed onto the next and I added crossfade to make the conversation smooth. I have now uploaded them to my code and added in images so that if a user has a visual output device they will see images with a healthy tip as they workout.
* This now means that the app has all functionality that I had hoped for at the beginning of the project. I have some things on the backlog that I need to fix but once these are fixed, the app should be ready to be deployed. I have updated my issue tracker with the smaller things that I have to fix, such as appending the closing message to the current sound/guided breathing clips.
* I have also created a github [repo](https://github.com/mnolan99/inTENt_Fitness) which I have added all my files, code and also included the template dissertation files.

**14/11/20**

* 2 hour - I have added an additional meditation session and also added the closing message to the end of all meditation and guided breathing sessions. I have also fixed all the bugs I had and I have now cleared the issue tracker and I’m ready to deploy the app for testing. I had to create a new intent handler that will send a pause intent when playing audio, even if the user says ‘stop’ as Alexa can’t handle the stop intent when audio is playing.
* 1 hour - I have updated the description, added all required instructions to deploy and also updated some slots for the chosen mode type. This app has now passed all of Amazon’s validation checks and I have sent it to Amazon for verification and publication to the app store. The app is in certification review which means I can’t edit anything until after the review which is at around 2pm on Wednesday 18th November. This will be after my meeting with my adviser so I will not be doing any more work on my project until after the meeting as I am unsure of what to do next (whether I should start the dissertation or to work more on the project). I have also looked into development of the app when the first version has been deployed and I will be able to continue to develop a second version, whilst the first version is available on the app store. I would like to add functionality to allow users to ask Alexa which type of sounds they can listen to and also add more utterances so that the skill can deal with more user input. I may have to get testers for this part to understand how people would communicate with the app

**18/11/20**

* 0.5 hours - I had my meeting with my adviser and we discussed the progress I had made in the last week and my adviser has looked at the videos I sent showing the app working. We spoke about the user testing that I will need to do, once the bugs that Amazon sent me have been fixed, I will add a couple more features and then deploy it again. Once it has been deployed successfully, I will put this out for people to use. I need to understand how people use the app though console log or analytics and I need to get weekly feedback from people who are using it. Once I have the user testing/evaluation started, I can focus on starting my dissertation
* I have received feedback about bugs from Amazon but I am very busy with assessed exercises for my other courses so I will focus on the bugs afterwards.

**20/11/20**

* 4 hours - I have fixed all of the bugs that Amazon pointed out and also added a new intent to allow users to ask what sounds they can listen to. I have decided to remove the reminders feature as I could not fix the issues due to the fact that I could not get the user’s timezone etc felt as though it didn’t give the user much additional functionality as it only allowed them to set the reminder exactly 24 hours later. I have created a backup on my hard drive and also uploaded the new files to GitHub. I have resubmitted this for certification.