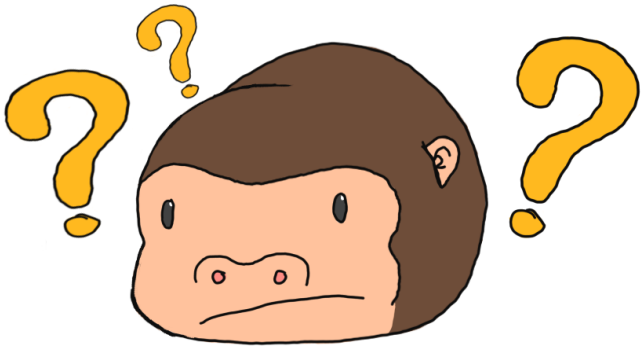
# ASSIGNMENT 3

## COSC2625 BUILDING IT SYSTEMS 2018

## KING KONG AND FRIENDS 2.0

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# Table of Contents

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KING KONG AND FRIENDS

'KURIOUS KINGKONG'

## PROJECT BACKGROUND

- **MOTIVATION**

Our group originally had a trouble deciding on a project idea, however after sharing common interests in developing a game rather than an application we decided to create a game. The idea of creating an educational game came from our group member Ty as he believes educating children would create a useful project idea. The group as a whole have thrown in some project ideas, but this idea was our choice in the end as we believed it would educate others with the game and educate ourselves during the development of the game.

- **PEOPLE**

**Kyongsub Kong**
Programmer
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Kyong is a well-organised member and good at managing the whole process of a project. He has a good sense of programming in several programming languages, such as Java, C and JavaScript, and also enjoys dealing with some challenges from work. He can also handle some video editing work with Adobe Premiere Pro.

He is in charge of Unity programming and overall project managing in this project. On a weekly basis, He gives each member individual work, which is what we currently need to carry out for programming our project.

**Ming Jie Guan**
UI Designer
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Ming can complete set work when he is given it and on time. He enjoys designing things such as websites and programs. Ming hopes to design the interface of the project and support others while doing so. He has worked as a user interface designer in the Kurious Kong project. He set the fundamental layout of the application.

**Ty Ty Chau**
Programmer
/ Graphic Designer
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His interest in the field is game designing and developing, as this is his aspiration in life and the direction he wishes to head towards for his future employment. His role is primarily in designing for this project, as well as contributing to the development of ideas produced by himself and his team members.

Ty has an interest and talent for sketching, as well as designing avatars since youth, he further developed these skills throughout his life as a leisure activity. This can help him to perform as a graphic designer in the project.

**Matthew McCarthy**
Sound Designer
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Matthew is good at getting work done before the due date, and has also done some minor work with HTML/CSS previously. He is also able to assist in any graphical design. Matthew hopes to be able to help out with the interface and design while also assisting others in doing all of their work.

Matthew is in charge of the sound design for the project and also assists others when needed.

**Huanghao Li**
Researcher
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Huanghao is good at logical reasoning and writing. He has a high interest in website design and hopes to use network design as the main development direction. Huanghao wants to play a role in designing the interface and doing what he is best at in the summary and writing part.

- ## AIMS AND GOALS

### Aim

Our aim was developing a 2D based application that brings children knowledge as well as entertainment. The application has three different categories upon launching the app. Each category is labelled with the topic of its own, there are two maths related and one to two literacy related. For maths, it has 'Ape Addition' and 'Monkey Multiplication' and for literacy, 'Starfish Spelling'. The titles are named after the first letter of each topic and the overall designs differ depending on their concepts.

### Goals

One of our goals was designing with different concepts for each game. According to their titles, 'Ape Addition' has three animated apes as main characters and a jungle background where apes live. 'Monkey Multiplication' has three animated monkeys hanging from vines and a rainforest background. There are two starfishes which are spinning animated and one weird starfish with starfish head and real fish body in 'Starfish Spelling'. We focused on how to attract our target users' attention.

Our second goal was to put sound effect and exciting background sounds. Even though game components are well-organised, the game playing will be boring without any sound. Thus, we decided to apply upbeat background sounds for each game and sound effects. To meet our goal, we found some sounds that are suitable to our project from royalty free websites. We tried to make them by ourselves, but it was not that easy for us who have no experience in making sounds.

Finally, our main goal was to program the whole project with 2D based game engine, Unity. Because Unity is well compatible with Visual Studio, we planned to program with C# language. To achieve this, we had to learn how the game engine works, such as sprites, scenes and objects. Once we understood the basic process, we started putting sprites and objects on scenes, as well as codes on them, including making buttons work, moving animations and showing questions and answers up.

**Justification**

Our goals are mainly set after we discussed about what our project is going to be. Design is regarded as the most important thing to attract children's attention who are our main target. Thus, we mainly focus on how our project game would look like. Also, sound is crucial in game playing. To make the main goal accomplished, we set our plans to program with Unity and Visual Studio. The reason we chose this engine is that one of our members have a previous experience making 3D games before.

- ## SCOPE

If time is allowed, animation and user interface could be improved. Smooth Animation will help users to avoid being distracted and enjoy their learning while playing. User interface may allow users not to find any difficulties when they run the app. Also, extended features, such as login system and avatar function can be implemented as well. Login system will help users to store and retrieve their data on the server. Avatar function can attract users to play and learn in order to customise their avatars with high quality items. What is more, various other games such as subtraction and division can be implemented in future.

# PROJECT PROGRESS

- ## DESCRIPTION

Our project began as an idea from our group member Ty as we were throwing out ideas around. We began by planning what we wanted the game to have and what it will accomplish, then we organised roles to everyone in the group depending on their strong points. We have progressed according to the plan and believe to have a working prototype by the end of week 12 and ready to demonstrate it. Due to our progress going how we want it to, we haven't made many changes to our original concept however, one thing that was difficult to accomplish was for the game to randomly generate equations/ questions for the player to answer which we couldn't find a solution to but to improvise, we made the game pick random questions from a predefined set of questions that we have set to give user's a feeling that they are getting different questions every time they play. This is the only thing that we had to change from the original plan as we believed it to be too difficult to accomplish in the time frame given.

- ## OUTCOMES AND DATE

Our group can successfully demonstrate all our minimal viable features including the 3 games, main menu and sound control. However, we were not able to accomplish our extended features which proved to be a bit of a challenge due to time limits and other assignments being due at the same time.

- ## SCOPE CREEP

The scope of our project has remained mostly the same as the group planned the project carefully while following the project plan to include only the things achievable with our skill set while making the game usable for users to use. The feature we had to change was how the questions in the game were generated. Rather than using randomly generated questions we made it so that we have many (around 10) preset questions and the game would randomly pick from those set of questions.

- ## PROGRESS

Our group has based our workload on the timetable we had set in the beginning. This ensured us that we can complete certain aspects of the project on time so that we don’t fall behind. Although we had some delays in certain week due to some members unable to complete them, the project went on track and in the end completed the assignment in the time given to us.

- **TESTING**

We haven't tested our project to others however demoing our project to classmates during weekly standups show good results and show that the game is functioning correctly.

- **TOOLS AND TECHNOLOGIES**

The technologies the team has been using throughout this project are divided under four categories, collaborative workspace, software, tools and resources. In this final report, it will have a few changes compare to the previous reports:

**Collaborative workspaces**

- Trello:
  'Trello' is a project management tool online, which we were recommended to use for the project. This helped us to set our goal, keep each individual member on track as well as to set each person a goal on a weekly basis, or a project to do. By using this, we could get to see how much each member is contributing to the project and make sure that everyone did their work equally.

- GitHub:
  We have been using GitHub to push and pull our codes each other to test and fix any bugs that we might encounter. We also have uploaded our draft reports for the assignments to share and ask for feedback on them.

- Google Drive:
  Everyone had a role to take part when it comes to writing a report. 'Google Drive' was the most ideal tool we could use to write our own part and then share it with each other, combine it and finalise it in real-time together. This is regarded as the most familiar tool to write reports together.

- Messenger:
  All members were more active on 'Facebook', so we decided to use 'Facebook messenger' to talk and discuss with each other most of the time. Messenger was more likely to allow us to have a conversation instantly due to its portability.

- Face-to-face meet up:
  The team tended to gather together in the library and sometimes in a pre-booked room when most of us have free time. We discussed about the project more and work on it together and help one another out if anything needs to be done. A face-to-face meeting helped us to easily understand others' thoughts or ideas.

**Software**

- Unity:
  We have used 'Unity' as our main program for this 2D game project as it is a very viable program. 'Unity' can also be used to develop games for iOS, PC, PS4 and more, not just limited to android apps only. There are a lot of resources online that we can refer to and follow to get familiar with the software. This is considered as one of the best game engines for beginner developers.

- Krita:
  We have used 'Krita', a free sketching app, to design and sketch sprites for our project. Our designer drew characters, logo and the like with this app.

- Adobe Photoshop cc:
  'Photoshop' was mainly used for designing the background and animations for the project.

- Visual Studio:
  'Visual Studio' is a code editor program that installed with Unity. We have used this to code and develop our application by using C# language throughout this project.

- Proto.io / Invision:
  'KingKong and Friends' used 'Proto.io' to develop our high-fidelity prototypes and to see what the product should look like. It's like a guideline for us to use and trace our steps. 'Invision' was used to improve the prototypes by creating hotspots on an action button/link.

- Bandicam:
  Bandicam is a software that can save screen capture as a video. We used this to make videos to show our outcome for presentation.

- Microsoft Words:
  We have used Microsoft Words to write our reports for assignment. This has significantly reliable functions than Google Doc, so one of us combined every members' work from Google Doc into a docx file.

- Adobe Premiere Pro CC:
  This is a video editing software. We used this to adjust video speed and add some effects on our videos which are going to be used in presentation.

**Tools**

- Laptop - Touch screen + pen:
  We have used a touchscreen laptop that comes with a pen to design and finalise our images and sprites with precisions.

- Laptops
  We have used our personal laptops to get resources from the Internet and to utilize Unity and Visual Studio for creating games

**Resources**

- Google and YouTube:
  We had searched and watched a lot of video tutorials before we actually started coding. Then, we sorted out what we needed for the project. We began to follow those tutorials and learn how to code by using 'Google' as well as 'YouTube' for demonstrations. This is a big help in this project as majority of the members have no experience in using the programs that are listed above.

- Unity Tutorial:
  The tutorials are provided on the 'Unity' website itself. This helps young developers to design and develop their first game from the beginning. We referred to some videos on the website for aiding us with developing the project.

- Royalty Website:
  We obtained most of the sample sounds on this website and some were edited by one of our members in charge of the soundboard. We planned to use a sound producing software, but we downloaded all sound sources from these websites. This is because we realised that it would not have enough time for us to learn how to use this software and produce sounds.

- Pixel-stitch:
  Since 'Kurious Kong' is based on pixelated images for mini games, 'Pixel-stitch' is used for image pixelization.

# CHALLENGES AND LEARNING

**Kyong says..**

I found that it is significantly difficult to share programming work together. As a student learning programming, we don't have any idea who has a strength in which part. Also, there are a lot of different ways to implement a single function. We have all slightly different approaches, so when we combine them, code is messed up. Since Unity cloud doesn't work instantly or we don't know how it works properly, we had to meet and program when we program Unity.

As I expected that programming would be the hardest part, we had to spend most time on programming. This is because I was new to Unity with C#. At first, I didn't even know how to move objects. As time goes by, I could make buttons functional and animations active. Eventually, I can run the actual game as we planned.

I could learn the basic concept of making games using Unity and get to know what processes come first for developing.

There was something that we couldn't succeed. One thing that we couldn't implement is throwing objects when users press answer buttons. For this, I had to put delay and animation that objects are thrown to characters between user's action and program's calculation. However, this is complicated than I expected before starting coding. So, we decided to drop this function due to a lack of time.

Time estimation was quite realistic, because at least we finished our project on time. However, it took us still longer than we estimated. Our estimation was that we might be finishing some of extended features, but we couldn't make any of them.

I had to run Unity on my portable laptop to work either at school or home. Every time I test it, the software stops for a while. This took me way longer to program. I should have used a desktop or a better laptop with a decent graphic card to reduce the developing time. I had no idea how heavy Unit is.

**Ming says..**

What I found easy was how easy the group was to deal with as everyone was easy to talk to, in addition to this, the group didn't have any arguments and we agreed on everyone's ideas. What I found difficult was the programming aspect of the project as programming is something I'm weak in no matter the language. There was nothing really unexpected due to everything being planned out.

The challenge that I and the group were expecting was the programming part as no one had any experience in using unity. To address these problems we had to watch online tutorials in order to learn a new programming language. Which ended up successful as we could complete our game

I have mainly learned a bit of unity however am still not any good or experienced in working with it.

Our group plans didn't change for me as the timetable were carefully set out which I followed with great success. I don't think there is something we should do differently as we finished out game with the MVFs

The timetable was realistic however we could of started on the programming a bit earlier as the last few weeks were a bit busy.

The tools and technologies worked out fine and in the end they helped us achieve our goal. A risk for me which materialised was a loss in motivation in the project as I had other things to worry about and would always put the project as the last priority.

**Ty says..**

What I have personally found easy to do in regard to this assignment was sketching out the ideas we came up with as a group, as well as designing the layout of the application, as it was my role as the sprite.

What I did not expect was how well the team worked together to get the assignment done within a reasonable amount of time, which allowed us to allocate more time to fix and improve things that could be done within our time frame and skills.

I have been stretched in the perspective that I had to deal with coding from scratch and there was nothing pre-done to aid me, but it was still not an impossible task as the team worked together to solve each issue.

The challenges that I expected to face was coding and organising. From the start, I am not very good at coding, hence why it continues to be a challenge to me especially when we decided to develop a quiz game. To address this issue, I watched tutorials on YouTube and got help from the unity community to help me understand. My organisation has also posed as a challenge for me as I am not efficient in my time organisation skills, I can get my time organised but often find myself getting distracted; to address this I have gotten a study buddy to go with me to the library to help make sure I am on track, and I have nothing interesting to look at.

New skills and experiences which I have gained from this project includes utilising Krita, which is a sketching software. Utilising and learning how to properly use Krita in terms of designing and sketching ideas for the team has not been too tough of a progress. However, developing a quiz game using Unity was eye opening, as I did not expect the complete differences between a 2D and 3D platformer game.

Our plan have had some minor changes, one being that the game originally meant to be fully pixelated however it is not. Another change is that we planned to have monkey screams if the answers were incorrect, but that was not implemented. Things didn't turn out as i expected, I expected that the game would be almost incomplete, but it turned out fully functional and did what we want it to do, mostly. I would start on the coding process earlier if I had to do it again and improve in the design and sketches.

Time was realistic, it did take long to learn how to code as I expected it would.

The tools worked out as expected, but there are always room for improvements and utilise it better. There were a few unanticipated events such as member sick or didn't attend the group discussion, which makes it hard to cooperate as a team.

**Matt says..**

What I found easy was that it was very easy to communicate with the group and we didn't have any arguments. I found it difficult to participate in helping out the coding aspect of the project since I'm not very proficient at coding.

I was expecting difficulty when it came to coding since we were using Unity and I hadn't used Unity before. To overcome this, we watched some online tutorials and overall I feel as though we successfully overcame this challenge.

I learned a small amount of how to use Unity, as well as a small amount of Android Studio as we had considered using it early on however it was scrapped in the end.

Our plans as a group did not change. We carefully thought about when we could do what and how much we could do in a time period so that we would be able to complete everything set out. I don't think there's anything I would change with hindsight since we completed our game with all the MVFs.

My timetable was very realistic and achievable, overall the only thing I would change would be to give myself more things to do to help ease the pressure off of others.

The tool and technologies have worked out fine. I identified early on that a risk I would have would be motivation loss and it became apparent during the middle weeks of work. I also fell badly ill during one of the weeks to the point where I couldn't contribute at all to the project.

**Harold says..**

I think the easiest thing in our group is communication and execution. Everyone agrees and respects every opinion. At the same time, our execution is also very fast after our absolute opinion, which makes our team very efficient. For the difficulties, I believe that it is our programming part. Programming as a most complicated part does bring us some trouble, but these troubles have not developed into accidents.

The most anticipated challenge is definitely the programming part, and as our weakest part, it is indeed challenging. But we also have corresponding solutions, we will spend more time to enhance our programming skills, and will learn more programming methods that suit us. After so long learning and practice, we have successfully completed our mission.

I have learned a lot of new skills, such as some knowledge of Unity. I think that the use of these new skills can still meet this task.

Our plan is generated after many thoughts, so we have confidence in our plan. Our plan has not changed throughout the process, and it is our step-by-step implementation of our mission in accordance with this plan. If we re-select us, we will not change this plan. It is the best for us.

For my timetable is basically achieved, but in this Final period, this timetable also gave me a lot of pressure.

The real task is going well. All the tools are also very handy. The risk of the entire mission is very small, and we all work very hard.

# PROJECT PROGRESS

**Kyong says..**

I have learnt that it is really important to form a group with someone has talent at their part. For example, if I need to create a 2D based game, this project needs at least members being good at drawing. Also, I have learnt that dividing work into the same sized workloads is difficult. It is inevitable for someone to work a lot more than others.

The whole group work has failed to be honest. We got 5 people in a group at first. One of them didn’t much work on our project since week 4 and didn’t show up in class. This project has been leaded by 4 people. The workload has varied depending on roles. Sound editor didn’t work much. He gained all music and sound effects from royalty free websites instead of creating ours. UI designer had much work in planning process. In developing process, however, he didn’t have work to do related to UI design, so he had to help sprite designer out. We were being lack of programming skills, at least 2 people should have worked on programming. I as a member being charge of programming had to spend much more time on this project than others.

Communication was the worst part of our group. We haven’t gathered all together since week 4. Every group work session has led by 3~4 members. Trello hasn’t been active by all members. From this experience, I realised that a

group should be formed with people who have enthusiasm towards the same thing. However, actually it is difficult to find them in a small class.

As a person who has experienced already, I would say that all members have to be active on Trello to check whether they are on the same page. Also, people who have to program should practise collaborating with other programmers before starting actual coding.

**Ming says..**

I have learned that communication is really important within the group and group members need to express their opinions on what's good and what's not, Group members who regularly come to classes also provided an easier way of communication. There were some weeks where some members didn't do what they were required to do on time.

The group used mainly a Facebook group chat to communicate and coming to class every week was another method of communication. These methods worked out really well as most members were on the right track.

A leader needs to help motivate and organise each of the group members roles and responsibilities which worked out perfectly for us.

Communication is the most important way to succeed in a group project and also planning out things at the start will lead to much smoother progress.

**Ty says..**

Being a part of this group throughout the semester have taught me that commitment and communication is the key to success. Communicating between each member is crucial, as to know every member's strengths and weaknesses. This is to build trust and make assigning role to each individual better, to prevent putting pressure and unfamiliar work to the team. Commitment is also important as the team need to stick to the goal and put in the effort, not doing it half-heartedly, which could drag down other members abilities.

What worked well is that at the start of the project, most of the members introduce themselves including their strengths and weaknesses, this gave the team a start of a direction to know who is good at what. However, what didn't work well is that we have one member who didn't really like to converse and rarely initiate in the discussion time.

The team's communication method is mainly on Facebook messenger, as well as meeting face to face during our free time. They are effective and bring the team together, discuss things out clearer and that everyone knows where to improve. However, it's rare if not never, that all the members are present during face-to-face discussion. There has been no change in the way how we communicate since the start of the semester.

As I have mentioned earlier that the important keys to success are communication and commitment. If I were to start again, I would keep the people who have made this project works and change the ones who doesn't really participate much with someone who are willing to communicate and take initiative to do so.

Advice that other group should take in considerations are that make sure every member has enough time to learn how to use the software, especially coding software, as it can be stressful for one member who would be the only one doing all the coding.

**Matt says..**

I have learned that good communication is the key to a good project. It's important for everyone to be on the same page in order to achieve the vision that everyone has. What may have been done badly would have been keeping everyone motivated as throughout some of us were unable to complete set tasks on time.

The groups communication hasn't changed since the beginning of the semester. We had a messenger group chat the entire time that we used to communicate with each other as well as being able to communicate more specific things over the Trello board.

The most important thing would be making sure that everyone is able to play a key part in making the project work before beginning. If we were to begin again I would set more defined roles for everyone through all the weeks of work.

Make sure that you can all communicate together effectively. Without good communication you're not going to get anything worth making done.

**Harold says..**

The most important thing for team work is unity and execution, but I think we are doing very well at this point, which is the main reason why our mission can be perfectly completed. What may be done badly is positivity. Some team members need the supervision of the leader to achieve the highest efficiency.

The communication method has not changed. We will use Messenger to communicate in addition to the exchange during class. The entire communication process is stable, efficient, and there is no problem.

The most important thing is to recognize each person's role, which is very demanding on the leader, but we are fortunate to have a good leader. Everyone can do what they do best and maximize efficiency. So, I think this assignment is perfect and does not need to be changed.

The most important thing for the team is solidarity and execution. If everyone can have the right role and do both, then this is a perfect group.

# MARKETING PITCH

“Don't you wish that it could be easier for your kids to learn? Why can't learning be a fun thing that kids want to do all the time? Well with our app 'Kurious Kong' this is possible! By combining gamification and learning kids are able to have fun while they learn! Not only will the fun be had from playing but with a points system the kids will also want to improve to reach higher scores! Improving kids math and English skills has never been this fun!”

# SKILLS AND JOBS

In order to optimise the results we have at present, it would be ideal to have extra team members, with ideally different skill sets as well as better practical knowledge. The positions to fill these criteria consist of having a designer, animator, developer, and a sound producer/editor. All roles are fundamental in the process of creating this educational application.

One of the most crucial role is done by the designer, due to the fact that they require an innovative mind frame to bring uniqueness to this application in order for it to stand out amongst other similar applications. There are a lot of different types of drawing. However, for a successful educational app, it is also essential for designers to have a previous work experience of drawing pictures for kids to visually appealing, especially when catering to a younger audience. However, the fundamental requirement for designers is knowing how to use sketching programs such as Krita.

Animators are no less important in creating the application, they are what allows the animations to come alive for the young audiences to interact with. This position requires the ability to visualise artistic concepts and the knowledge of photoshop and preferably animating software (Adobe Flash, Illustrator and After Effects).

Sound producers are in charge of the background music and sound effects. They need to be experience in using Audacity or sounds editing software. Every game needs a background music and sound effects. To enable users to enjoy playing and learning, upbeat background music is necessary for this application. Thus, the candidates for a sound producer position should be specialised in upbeat sound production.

Developers are to combines every factor together, that includes the functionalities and how the layout of the product would look like, which discussed with the designers. Applying the animations at the correct area, having appropriate sound effects and background music will drastically improve the gameplay experience. This role is as important as designing stage, because the application will be built upon this. They need to be versatile with programming languages, as well as an ability to adapt to new coding editor software, in this case, it would be C# on unity.

Overall team members should be able to understand how other position works for a better teamwork. Even if they are professional in their fields, they might have communication problems between team members if they don't have any knowledge about other positions. Thus, they should understand the basic working processes of other positions. Moreover, it would be perfect if they are open-minded towards having a conversation on their personal matters to get to know each other well, in order to make agile workplace, which is helpful for creating flexible and productive environment.