

**STUDENT INDUSTRIAL INTERNSHIP PROGRAMME LOGBOOK**

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**Programme: Information Technology (IT)**

**Place of Training: Murdoch University, Australia**

**Period of Training: 7 months**

**Project Title: Nueromender Project**

**SIP LOGBOOK REPORT**

**LOG BOOK WEEK NO: 3-4**

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| **WEEK NO** | **DATE** | **BRIEF DESCRIPTION OF DAILY ACTIVITIES** |
| **3** | **16/09/2019** | * Controller interaction with User Interface |
| **17/09/2019** | * Fix 3D modeling * Snapping Theory research |
| **18/09/2019** | * Finalizing User Interface for Module 3 |
| **19/09/2019** | * Fixing Controller interaction with User Interface |
| **20/09/2019** | * Fixing button of User Interface * Recheck Main Menu User Interface |
| **4** | **23/09/2019** | * To figure out how to enable access from other PC to database |
| **24/09/2019** | * Snapping object |
| **25/09/2019** | * fixing keyboard in VR environment |
| **26/09/2019** | * change Main Menu UI into VR environment |
| **27/09/2019** | * Recheck the problem with snapping |

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| Logbook Weekly Evaluation by HOST COMPANY SUPERVISOR | | | | | |
| I**nstruction to Host Company Supervisor**  Please refer to the student’s to assess his/her performance.  Please award the scores based on the range below: | | | | | |
| **Student’s Score** | **Beginning**  **(<2.0)** | **Developing**  **(2.0 to <3.25)** | **Accomplished**  **(Rare)**  **(3.25 to <4.0)** | **Exemplary**  **(Exceptionally Rare)**  **(4.0 to 5.0)** | **Score** |
| Initiative & Creativity | Had little observable drive and did not have new ideas | Some observable drive and some new ideas | Mostly self-starter and sometimes sought new challenges and offered new ideas | Always a self-starter and consistently sought new challenge and offered new creative ideas | **/5** |
| Task Accomplishment & Commitment | Partially accomplished given task despite full supervision | Accomplished given task but with full supervision | Accomplished given task but with some supervision | Accomplished given task with very minimum supervision | **/5** |
| Attendance & Punctuality | Frequently absent and always late | Sometimes absent and sometimes late | Never absent and almost always on time | Never absent and always on time | **/5** |
| Attitude & Self Control | Unable to demonstrate positive attitude and hardly maintained self-control under pressure | Occasionally demonstrated positive attitude and occasionally maintained self-control under pressure | Sometimes demonstrated positive attitude and maintained self-control under pressure | Consistently demonstrated positive attitude and consistently maintained self-control under pressure | **/5** |
| Total Score | | | | | **/20** |
| **Comments:** | | | | | |
| **Host Company Supervisor’s Signature & stamp:** | | | | | |
| **Name & Designation:** | | | | | |
| **Date:** | | | | | |

*(make copies if necessary)*

**DETAIL REPORT WEEK NO: 3**

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| **Objective(s) of the activities :**   * Controller interaction with User Interface |
| **Contents :**  In order to let interaction between user and User Interface, I tried to change from using Virtual Reality (VR) controller, HTC VIVE to eye gazing to click a button. I found a tutorial in YouTube about gaze timer interaction for Virtual Reality. The problem with the button before I try the eye gazing controller are, the button does not function or even highlighted whenever the mouse or controller hover on it. It supposed to change color when controller hovers on it or when it is clicked.  Using the eye gazing timer, it should appear a reticle for gazing and target the object in the scene. Figure 13 shows the picture of gaze interaction. The eye gaze will target the object that needs to be interacted, when the time up, an action will be triggered.  http://talesfromtherift.com/wp-content/uploads/2015/07/crosshair.png  Figure 13 Eye Gazing Timer Interaction   * Challenges I was facing along the way were:   + The gazing timer is successfully created but it is not working when the scene was running. The timer does not work when the reticle has been targeted to the object.   + It is realized then the gaze timer interaction tutorial will work on the Google VR cardboard or Oculus. It is possible to do in HTC Vive, but the works get complicated when it uses the old version of SteamVR where we need to find the right and left eye of the Head-Mounted Display(HMD) of the headset. Therefore, it is the best to keep the controller working. |
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**DETAIL REPORT WEEK NO: 3**

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| **Objective(s) of the activities :**   * Fix 3D modeling * Snapping Theory research |
| **Contents :**  While working with controller, the 3D modeling seems to have some problem where the design appears differently in Unity compared to Sketchup. Figures below show the image of 3D modeling in Unity and Sketchup.  C:\Users\AzelanMarzuki\OneDrive - Universiti Teknologi PETRONAS\WILDFLOWER - 대학교\Academic\Undergraduate (UG)\인턴\1.0 BRIEFING + IMPORTANT\Logbook & Report\SIP\W3\WhatsApp Image 2019-09-17 at 14.12.11.jpeg C:\Users\AzelanMarzuki\OneDrive - Universiti Teknologi PETRONAS\WILDFLOWER - 대학교\Academic\Undergraduate (UG)\인턴\1.0 BRIEFING + IMPORTANT\Logbook & Report\SIP\W3\WhatsApp Image 2019-09-17 at 14.37.29.jpeg  Figure 14 3D Modelling in Unity and in Skectchup  The 3D model has been fixed by adding some mesh into the 3D modeling. However the model still appears different when imported to other Unity on other PC. But, It appears as wanted in my Unity.  As for the snapping, the idea about snapping on the internet are:   * To use empty game object as a socket point and save object as prefab * Raycast (determining the line of sight of player) from mouse when placing a block * Ask for the nearest from the nearest socket from object and snap to the transform * Challenges I was facing along the way were:   + The snapping tutorials are mostly for snapping 2d object and meant for editor mode in Unity   + There is an asset that allow snapping for real-time but it must ne purchased in order to use it   + The snapping also available in VRTK, but the version was not compatible with current version of SteamVR or sometimes with the Unity Version |
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**DETAIL REPORT WEEK NO: 3**

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| **Objective(s) of the activities :**   * **Finalizing User Interface for Module 3** |
| **Contents :**  As we are working in a team, therefore the task was passed to the other teammate to figure out the solution for the snapping part. I continued to finalize the instructions for user. In module 3 there will be two instruction forms, Images and text instruction. User is allowed to choose either one to complete the module. Both instructions also able to run at the same time as they are not dependent on each other.  Figure below show the Image instruction (left) and text instruction (right) designed for module 3.  C:\Users\AzelanMarzuki\OneDrive - Universiti Teknologi PETRONAS\WILDFLOWER - 대학교\Academic\Undergraduate (UG)\인턴\1.0 BRIEFING + IMPORTANT\Logbook & Report\SIP\W3\WhatsApp Image 2019-09-20 at 14.11.01.jpeg  Figure 15 Modules 3 Instruction Form   * Challenges I was facing along the way were:   + The buttons were still cannot be controlled by controller. At the moment the buttons can only be clicked using mouse during runtime.   + To figure out how to sketch the instruction in image form and create sentences for user to understand the instructions   + Coding for the changing image the instruction was not working in the forst try because the image loaded was in Raw Image form, while in the coding the image that will be loaded is in sprite form, which is not supported by Raw Image. |
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**DETAIL REPORT WEEK NO: 3**

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| **Objective(s) of the activities :**   * **Fixing Controller interaction with User Interface** |
| **Contents :**  I tried to fix the controller to be able to touch and click the button. A sample given in the SteamVR plugin was used as the reference to allow the button to be able to click as the concept is the same. The button was able to be clicked previously when camera was rendered in the canvas instead of camera world. When the camera rendered in the canvas changed to Virtual Reality (VR) camera, the environment does not change (as the camera does not follow the player during runtime).  The problem was because there are two cameras in the scene, VR camera and camera for the scene itself. Therefore when the scene was run, it takes the camera of the scene instead of VR camera. When the camera removed and camera rendered changed to none, the scene can be run successfully. The button also able to be clicked using mouse before tested using VR controller (at the moment the movement and rotation of camera also the input was captured using WASD and arrow button and mouse input as simulating VR environment).  As the scene successfully run and the button able to be clicked. It is realized when the button clicked the image and some text are not in order. It is because whenever the button clicked, the counter doubled by two resulting the image and text to load other text or images. The scene was duplicated before testing and changed to proceed with other part. The previous scene was able to run with correct counter whenever the button clicked. As a result, I just stick to the original scene. The problem occurs when I try to change the coding for “Next” button to enable the UI to load the previous image or text for “Back” button. The changes were related with counters so it becomes complicated to change because we would need to capture the current counter. |
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**DETAIL REPORT WEEK NO: 3**

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| **Objective(s) of the activities :**   * **Fixing button of User Interface** * **Recheck Main Menu User Interface** |
| **Contents :**  As mentioned previously, the “Back” button was related to counter. The counter need to reverse the counting to allow previous text or image to be loaded while need to be in sequence. The solution for the problem was to put the decrement counter statement inside if statement in coding to get the logic when displaying the image or text.  Next, I rechecked the Main Menu Interface scene. The scene now has worked in order. However there is still a problem with database. As an alternative, there are two options at the moment since the database is not working on another PC. First option is to start from lobby, the user create room and choosing modules before entering the scene or start from database, then go to lobby continue to create room, choosing module and entering scene. For the moment the first scene will be used as a testing to test connection between user and server.   * Challenges I was facing along the way were:   + Button;     - When “Next” button was clicked until it reaches some limit for the counter, both “Next” and “Back” buttons cannot be clicked at the same time, the choice was to restart the scene to enable the button.     - The counter sometime changed to negative when both button clicked. It is because the precision of the button during runtime on PC and runtime on Virtual Reality (VR) environment are different   + Database;     - Database still not be able to connect when run on other PC     - The authentication was still in basic phase in which the database was coded to authenticate the input received from scene unity the same. There are no verification included to the database at the moments |
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**DETAIL REPORT WEEK NO: 4**

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| **Objective(s) of the activities :**   * **To figure out how to enable access from other PC to database** |
| **Contents :**  First thing to test are:   * To ping IP address of computer that contain database (if successful then the connection should be no problem) * To try accessing through browser using IP address (e.g : 192.168.x.x : port of database)   I have tried to ping the IP address of computer, the connection have no problems but the database still cannot be accessed. Alternative to be tried:   * enable privilege through CMD:   + from administrator elevated command prompt, try adding a rule to allow TCP Port through windows firewall   + use netsh advfirewall firewall to add rule   + test connection on the other computer that have the same subnet     Next, to change database input into email however the setup is quite complicated as we need to associate with specific DNS which we have to configure the DNS for mail server so that we can send confirmation email. As a result, the database is still in pending status as we need to complete the current module. |
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**DETAIL REPORT WEEK NO: 4**

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| **Objective(s) of the activities :**   * **Snapping object** |
| **Contents :**  I tried to follow a tutorial on YouTube about Socket inventory for steamVR. The tutorial explains about snapping two objects in real-time using socket and slot. The tutorial also provides Unity scripts and asset to be used in developing the project. As the tutorial followed there were no errors displayed in the console before it is tried in VR device.  When test running via VR device, the environment could not be run as in tutorial video. The cube in the environment could not be lifted up, spawned or even snap to the socket problems that have been identified are:   * Some of the setting are set differently from the tutorial * Some prefab are not apply to all after changes made.   For the time being, I just tried to recheck the tutorials with Unity project and fix some settings that are not the same as tutorials. Challenge I was facing along the way was sometimes, the settings in Unity on my computer can be different in other computer. For example, the project can be run successfully in my computer. After the project transferred run in other computer with the same version of Unity the setting changes and the project cannot be run. The object in the project also appeared differently when it is opened in other computer. |
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**DETAIL REPORT WEEK NO: 4**

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| **Objective(s) of the activities :**   * **Recheck the problem with snapping** |
| **Contents :**  Tutorial was checked again with Unity project to ensure the setup is correct. Some setting has been changed because it does not have the same setting as the tutorial. Next, I tried to revise coding and scene to have some idea about snapping and implement it to our module.  The concept about snapping is that we would need to have socket and slot for the object to be snapped. The number of slot depends on how many objects need to be snapped. The coding also related to hand coding in which the hand need to have some interaction when touching the socket (for example, interaction when the hand touch the socket with some object and to retrieve back the object when it is detach from the socket. The slot is attached to the socket and it stores object while belt is attached to the slot as parent.  Idea to implement in module are:   * to attach the "moveable" script to module 3 component such as Adils leg, round cylinder Adils, and screw * to attach the "belt" script to part of module 3, the concern arises when we need to change the slot into static and fix into the object instead of following the head * to attach the "hand", "socket" and "input manager" scripts to right and left hand * to attach "slot" prefab into the scene, the slot prefab can be resize able but it is unsure whether the function is still the same after changes made   Challenges I was facing along the way were:   * There are some script that already have a fix function and used for other purposes in module 3, for example hand script to grab object and teleport. The hand script needs to be changed to let it have the same function as snapping tutorial. it is not sure if the changes in the hand script made will change other settings or not |
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**DETAIL REPORT WEEK NO: 4**

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| **Objective(s) of the activities :**   * **change Main Menu UI into VR environment** |
| **Contents :**  In previous Main Menu, it is not available in Virtual Reality Environment. To change the environment, there are several layers in the Main Menu scene. To test the scene in VR setting, I first created a scene with start button.  In order to have VR setting in the scene, the camera rendered is changed to 'screen space - camera' instead of overlay scene, camera of CameraRig prefab is attached to the render camera in canvas. At first the button still not clickable, because the controller used to click the button was hand, and the button to be clicked in the environment was far and unreachable by hand. We need to use laser from controller to hit the button.  Challenges I was facing along the way were:   * When the controller has been changed to use laser to hit the button, the button still not able to click. Problem identified when some lines in the script need to be changed and the script also need to be attached at camera rig and not at other GameObject. After changes, the button can be hit using laser from controller. * Some of scene in Main Menu needs to have user input from user. To have the input, we would need a keyboard displayed in VR environment. When I wanted to import asset from Unity store, most of the asset for keyboard need to be paid. Some of it are free, but the functionally works differently. I found one free asset that have the functionally that fits the scene.   However, when the keyboard run in VR and laser hit the keyboard, then button on the keyboard become disable and nothing displayed on the input field. Same setting as button has been applied to have same function but it is failed. The solution for the problem still in progress. |
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**DETAIL REPORT WEEK NO: 4**

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| **Objective(s) of the activities :**   * **fixing keyboard in VR environment** |
| **Contents :**  The keyboard was imported from Unity Store and expected to have the same function as button in the project. However when the same steps is applied to the keyboard, the keyboard still unable to be clicked. Steps applied are:   * the script for keyboard was attached to the CameraRig prefab and button click setting is set in to keyboard function * then each button on the keyboard was added a box collider to unable click action   When the setting done, the keyboard still unable to be clicked. I tried to search for other keyboard assets in Unity Store, but the choices are limited as most of the assets need to be purchased beforehand. I tried several free keyboard used for Virtual Reality (VR) environment downloaded from Unity Store and browser. All keyboard imported in the project was clickable on screen while running but not in VR environment although same setting for the keyboard was applied.  At last, the alternative that I chose to have was to make my own keyboard using button. The setting was set to same setting as clicking button. Challenges I was facing along the way were:   * the button created need to be coded and set one by one according to alphabets on real keyboard * the laser input for controller also need to be set into the same setting which is using laser pointer and make sure it can hit the button * the step to setup the keyboard was easy if it not related to VR, however the process get complicated as we need to cater the controller event handler to handle the VR environment. |
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