# GAM400 Project Brief: *WoodShop*

## Team Name: Vicious Racoons

# Game/Project Summary

 WoodShop is part simulation and part tool. We plan on using this simulation as a hobbyist 3D modeler. Woodshop mimics real-life tools and is focused on maintaining real-life limitations of materials. In the WoodShop users will use various tools to model and manipulate their wooden creations to their hearts’ content. Users will also be able to export these in a usable 3D format.

# Target Demographic

 WoodShop is for people who want to experience wood sculpting in VR or want to make a model using the techniques of sculpture in wood. This project, however, is mainly focused on implementing core features with minimum aesthetic polishing; this project will serve as a talking point for graphics systems and using unity to achieve various effects.

# Target Play Time

**Atom**: Pick a tool and perform that tool’s action. Duration: 1-5min/action

**Session**: A play session may consist of one or many tool uses. A user may finish a simple project in one session, while a more difficult project may take several sessions. The duration for a given session should be 30-60min

# Game/Project Description:

DESIGN

WoodShop is a two-semester project. The first semester is focused on developing core tech, minimizing the priority of other non-core systems such as particles, sounds, UI, etc.

* Tools
  + Saw (dividing a mesh into 2 sections)
    - Back and forth motion
  + Rotary Tool (manipulating mesh)
    - Depth / size is controlled via touchpad
    - Right hand is the cutting tool
  + Lathe (circular wood shaping)
    - Left hand selects axis of rotation - also locks wood into place as it rotates
    - Right hand is the cutting tool
  + Paint (color mesh)
    - Left hand is the color palette
    - Right hand is the paint brush

TECHNOLOGY

Most of the core tech will be completely implemented within the first semester.

* VR space
  + VR Table
  + VR tool representation (probably a sphere with text)
  + VR Room (draw the VR space?)
* Mesh manipulation and management
  + Access arbitrary vertices quickly
  + Change colors, positions easily
  + Separate and add easily
* 3D models
  + Hands
  + Tool visualization
  + Wood
* Shaders
  + Wood texture
  + Coloring for paint

 ART & AUDIO

* Art
  + Wood texture
  + Tool visualization(s)
* Audio (low priority)
  + Tool sfx
  + Incident noises (wood banging etc)
* Content
  + Font

# Risks

**Risk Area**: VR environment

**Description**: It is the first experience to do a VR project for all members. There must be a steep learning curve for understanding VR input systems and VR dev environments. Another problem is there also must be a bunch of risk that we are not aware of yet because of this new environment.

**Mitigation**: The only mitigation is to keep studying more and spending more time on testing. Before starting this project, we will research and collect good references to avoid consuming too much time on figuring out in the VR environment.

# Team Members:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Primary Role | Secondary Role | Tertiary Role |
| Cody Morgan | Producer | Graphics Programmer | Content manager |
| Minsu Kang | Tech Director | Graphics Programmer | UI |

# Project Plan:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System | Owner | Duration (Days) | Start Date (week beginning) | Due Date (milestone) |
| VR room visualization and wood model | Cody | 5 | 3 | Alpha |
| Tool models: Lathe and paint | Cody | 5 | 4 | Alpha |
| Tools: Lathe (C#) | Cody | 10 | 5-6 | Beta |
| Tools: Paint (via Shader) | Cody | 10 | 7-8 | Beta |
| Wood texture / shader | Cody | 5 | 9 | Final |
| File exporting | Cody | 5 | 10 | Final |
| Tool models: Saw and rotary tool | Minsu | 3 | 3 | Alpha |
| UI: Basic tool selection | Minsu | 2 | 3 | Alpha |
| Tools: Saw | Minsu | 10 | 4 | Alpha |
| Tools: Rotary tool | Minsu | 10 | 7 | Beta |
| UI: Visualized tool selection | Minsu | 4 | 9 | Beta |
| UI: Basic tutorial | Minsu | 4 | 10 | Final |
| Effects (TBD) | TBD | 10 | 11 | Final |

# Milestone Deliverables

## Alpha Milestone – Pre-Production Exit

In addition to the playable sandbox level, the following items will be complete at this milestone:

* Basic wood content and environment content is present
* User can select tools from D-pad
* The user can see the tool and interact with it (tool is non functional)

## Beta Milestone – First Playable

The first playable will contain a complete game experience including most of tools and UI

* User can select from four tools in UI menu system
* Lathe first run (c# mesh manipulation)
* Saw first run (c# mesh manipulation)
* Paint started
* Rotary tool started

## Final Milestone – Production Exit

In the final milestone, a player can play with at least 4 tools for sculpting a wooden log in the middle of the virtual wood shop. Tools will be easily selected and used, and the final project may be exported as a 3d model.