**EP1000 Digital Fabrication Fundamentals**

**Module Project**

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| **Group:**  02 |  |
| **Adm No:** P2004118 |  |
| **Name:** Tew Jing An |  |

**Project Title:**

Macropad with mechanical switches & rotary encoder

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**What does it do?**

* It acts as a HID (Hardware input device) to a computer. It can open applications or execute multiple keystrokes at the touch of one button and is fully customizable.

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**What are it's features?**

* 10 Switches for 10 custom functions
  + Mute Microphone on Discord
  + Deafen on Discord
  + Turn on Screen Share on Discord
  + Start recording on Nvidia GeForce Experience
  + Nvidia Shadowplay record last 15 seconds of game
  + Play/ pause
  + Backward (Skip back to start of music)
  + Forward (Skip to next track)
  + Project button (Windows+P)
  + Turn off laptop screen
  + Toggle LED modes
* 1 Rotary Encoder (Volume Control)

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**What will you make?**

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| CAD Design, Graphics | The frame for the macropad, the housing for the switches |
| Laser cutting | Middle plate of macropad (allows light from LED through)  Made up of 2x 3mm Laser Cut Pieces (Transparent/ Translucent) |
| 3D Printing | Top and bottom plate of macropad |
| Micro-controller | Arduino Pro Micro (for HID features) |
| Input devices | Gateron Yellows (Student will provide) |
| Output devices | Hardware interface device - Keyboard output |

**Bill of materials**

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| **Sn.** | **Qty** | **Item Description** | **Approx Cost** |
| 1 | 1 | Arduino Pro Micro (USB – C) | $7 |
| 2 | 20 | 1N4148 (Diodes) | $2.34 |
| 3 | 1 | USB A – C cable | $2 |
| 4 | 12 | Gateron Yellows | 0 |
| 5 | 1 | Rotary Encoder | $2.63 |
| 6 | 6 | WS2812 Neopixel | ~$6.55 for 1m |
| 7 | 1 | Transparent Acrylic Sheet (A4 Size) | -$5 |

**References:**

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| 1. https://matt3o.com/hand-wiring-a-custom-keyboard/ |