Session 5 User Interface

>_ {Code4Loop};
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RECAP from last 2 sessions - Logic and Flow Charts

- Homework Review / Questions
- Understanding of Flow Chart
- Introduction to Computer Programming concepts using Scratch
 - Writing Output Instructions
 - Writing Input Instruction
 - Creating Sounds and using Characters/Sprite
 - Using Multiple inputs use of Sounds and keyboard
 - Repeating instructions using For Loop
- Flow chart about an idea
 - Understanding user actions and creating pictures for step by step instructions
 - Easier to understand the use of the program
 - Requirements: Expectations of the program what is it supposed to do?

Software Application Development Process

- STEP 1. IDEA: Requirements -> Problem and Existing Solutions
- STEP 2. DESIGN: Flowchart, Mockup and User Interface
- STEP 3. DEVELOPMENT : Writing Code, and Creating Programs
- STEP 4. TEST: Test the application to see if it works and works CORRECTLY
- STEP 5. DEPLOY: Send it to the users by installation or by sharing it or by setting up for download
- SETP 6 and 7: Iterative Maintenance Repeat the process to make it better



What is User Interface (UI)?

- A user interface(UI) or an "interface," is the means in which a person controls an <u>application</u> or <u>hardware</u> device.
- Next step from Flow Charts
 - Not just combination of shapes, lines, and text that graphically illustrates a process or structure
- A good user interface provides a "user-friendly" experience, allowing the user to interact with the software or hardware in a natural and intuitive way.

User Interface is also known as Graphical user interface (GUI)

- Most software programs have a graphical user interface.
- This means the program includes graphical controls which the user can select using an input device such as a mouse, keyboard, touch, voice.
- A typical UI of a software program includes a menu bar, toolbar, windows, buttons, and other controls.
- The Macintosh and Windows operating systems have different user interfaces but they also have similar elements, such as a <u>desktop</u>, windows, icons, etc.
- These common elements make it possible for people to use either operating system without having to completely relearn the interface.
- Programs like <u>word processors</u> and <u>Web browsers</u> similar user interface, providing a consistent user experience across multiple programs.

Hardware Interface or Software Interface

- Most <u>hardware</u> devices also include a user interface but not TOO COMPLICATED as a <u>software</u> interface.
- A common example of a hardware device with a user interface is a remote control.
 - A typical TV remote has a numeric keypad, volume and channel buttons, mute and power buttons, an input selector, and other buttons that perform various functions.
 - This set of buttons and the way they are laid out on the controller makes up the user interface.
 - OTHER EXAMPLES: Digital cameras, Digital Clocks, Digital Thermostat, and Stereo systems also have a user interface.
- Most Interfaces are a combination of both hardware and software
 - For example, to control a software program, you typically need to use a keyboard and mouse, which each have their own user interface.
 - Control a digital camera, you may need to navigate through the on-screen menus, which is a software interface.

Why use tools for User Interface early?

- Helps create "MOCK UPS" for your applications
- No code required
- Show how the user will work with your program/application/game
- Regardless of the application, THE GOAL of a good user interface is to be user-friendly.
- It can be VERY frustrating to use a device or application that doesn't work the way we want it to!

Examples of a User Interface







In Class Exercise

- Building a User Interface
- Login to MockFlow.com
- Draw User Controls

Or Output

Other prototyping Tools

- For App design and creation
 - Free Invisionapp
 - Proto.lo Good for starting Wireframing and app design
- Balsamiq.com
 - Easy to use for programming any applications

Homework Exercise

- Project Idea for Game/Application
- Finish if not done, High Level Flowchart for your game/Application
- User Interface Practice for your application Create a MOCK UP using Mockup
- Sample Topics
 - Game that can be coded in Tools like Code.Org, Scratch and Python
 - Single User or Single user vs Computer (e.g. Ping Pong, checkers, tic-tac-toe)
 - Programming Puzzles
 - Applications that require input from sensors sound/microphone, motion sensor, or other input devices
 - Application that uses "cloud" as input or output device e.g. getting automatic notification to the phone about weather or notification to cell phone about detected motion at home!!

Additional resources and references

- https://docs.google.com/drawings/ FREE Drawing application for design and flow charts
- Example in class: https://docs.google.com/drawings/d/1fB_WdvuF5Nd4DX_31ioGTw89SI-iUKQIbQ4hg-zP43g/edit?usp=sharing
- Mockflow.com- application for wireframing and mockups
- Scratch to create mockup using Scratch editor (scratch.mit.edu)

Python.ORG

- Online Python IDE
 - http://www.tutorialspoint.com/execute_python_online.php
- Python Documentation Website: www.python.org/doc