CS/EE 120B

Custom Project: Keyboard Hero
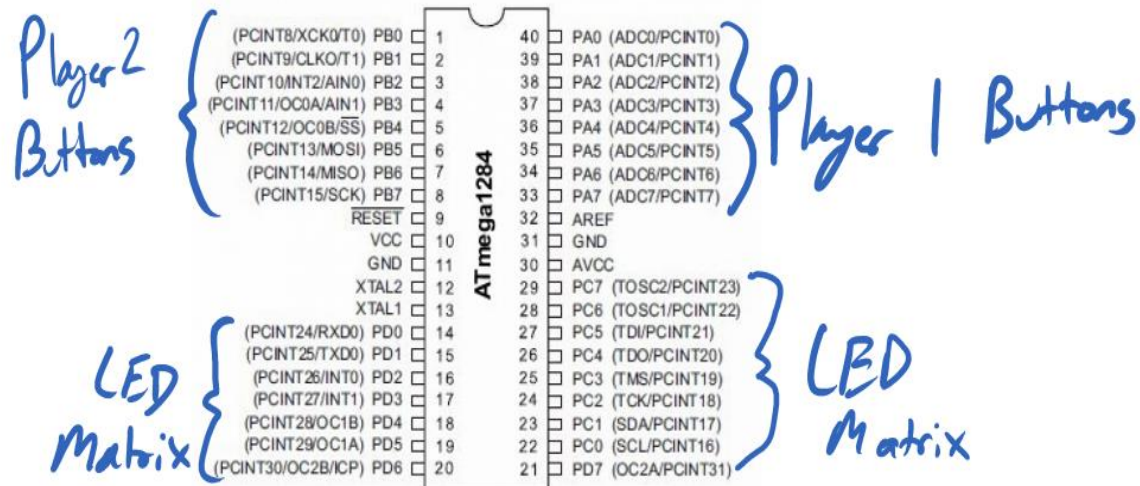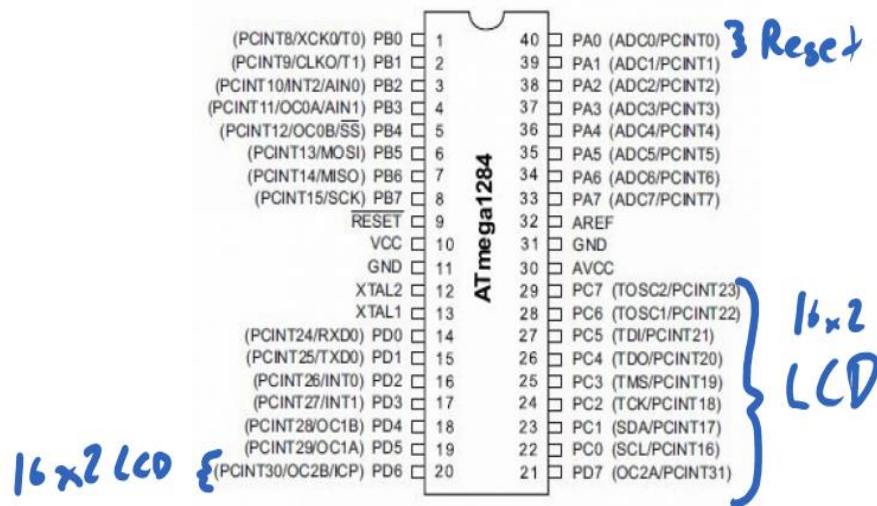
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May 04, 2018

Introduction

Keyboard Hero is a two-dimensional game that simulates playing a keyboard. Tshe player controls a "keyboard" in the form of five buttons. The idea is for the player to hit a button when the light above that button turns on. There will be multiple lights above a button so the player knows which button presses are coming up next. In two player mode, another player can determine the buttons that need to be pressed. The aim is for player one to get a very high score and the aim for player two is to make player one miss over 75% of button clicks.

Perhaps you can implement a rhythm song to make it kind of like guitar hero

Components (Pin-out)

- **Inputs**
    - 8 Buttons for Player 1 Controls
    - 8 Buttons for Player 2 Controls
    - 1 Button for Reset
- **Outputs**
    - LED Matrix
    - 16x2 LCD Screen

First ATmega1284 pinout diagram (top):

Left pins	#	#	Right pins
(PCINT8/XCK0/T0) PB0	1	40	PA0 (ADC0/PCINT0) **3 Reset**
(PCINT9/CLKO/T1) PB1	2	39	PA1 (ADC1/PCINT1)
(PCINT10/INT2/AIN0) PB2	3	38	PA2 (ADC2/PCINT2)
(PCINT11/OC0A/AIN1) PB3	4	37	PA3 (ADC3/PCINT3)
(PCINT12/OC0B/SS) PB4	5	36	PA4 (ADC4/PCINT4)
(PCINT13/MOSI) PB5	6	35	PA5 (ADC5/PCINT5)
(PCINT14/MISO) PB6	7	34	PA6 (ADC6/PCINT6)
(PCINT15/SCK) PB7	8	33	PA7 (ADC7/PCINT7)
RESET	9	32	AREF
VCC	10	31	GND
GND	11	30	AVCC
XTAL2	12	29	PC7 (TOSC2/PCINT23)
XTAL1	13	28	PC6 (TOSC1/PCINT22) **16x2 LCD**
(PCINT24/RXD0) PD0	14	27	PC5 (TDI/PCINT21)
(PCINT25/TXD0) PD1	15	26	PC4 (TDO/PCINT20)
(PCINT26/INT0) PD2	16	25	PC3 (TMS/PCINT19)
(PCINT27/INT1) PD3	17	24	PC2 (TCK/PCINT18)
(PCINT28/OC1B) PD4	18	23	PC1 (SDA/PCINT17)
(PCINT29/OC1A) PD5	19	22	PC0 (SCL/PCINT16)
16x2 LCD (PCINT30/OC2B/ICP) PD6	20	21	PD7 (OC2A/PCINT31)

Chip label: ATmega1284

Second ATmega1284 pinout diagram (bottom):

Left pins	#	#	Right pins
Player 2 Buttons (PCINT8/XCK0/T0) PB0	1	40	PA0 (ADC0/PCINT0)
(PCINT9/CLKO/T1) PB1	2	39	PA1 (ADC1/PCINT1)
(PCINT10/INT2/AIN0) PB2	3	38	PA2 (ADC2/PCINT2)
(PCINT11/OC0A/AIN1) PB3	4	37	PA3 (ADC3/PCINT3)
(PCINT12/OC0B/SS) PB4	5	36	PA4 (ADC4/PCINT4) **Player 1 Buttons**
(PCINT13/MOSI) PB5	6	35	PA5 (ADC5/PCINT5)
(PCINT14/MISO) PB6	7	34	PA6 (ADC6/PCINT6)
(PCINT15/SCK) PB7	8	33	PA7 (ADC7/PCINT7)
RESET	9	32	AREF
VCC	10	31	GND
GND	11	30	AVCC
XTAL2	12	29	PC7 (TOSC2/PCINT23)
XTAL1	13	28	PC6 (TOSC1/PCINT22)
(PCINT24/RXD0) PD0	14	27	PC5 (TDI/PCINT21)
LED Matrix (PCINT25/TXD0) PD1	15	26	PC4 (TDO/PCINT20)
(PCINT26/INT0) PD2	16	25	PC3 (TMS/PCINT19) **LED Matrix**
(PCINT27/INT1) PD3	17	24	PC2 (TCK/PCINT18)
(PCINT28/OC1B) PD4	18	23	PC1 (SDA/PCINT17)
(PCINT29/OC1A) PD5	19	22	PC0 (SCL/PCINT16)
(PCINT30/OC2B/ICP) PD6	20	21	PD7 (OC2A/PCINT31)

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Complexities/Build-upons

1. Using the LED matrix to display the signal for a button press
2. Using the EEPROM to save the high score of the player
3. Using buttons to register presses for player 1 and 2
4. Using a button as a reset
5. Using a 16x2 LCD screen to output messages, scores, and victory status to the user.

Would this thing have a menu or multiple "songs"? Also are you using two ATmegas?