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Custom Lab

Project: JukeBox

Objective:
The goal of our project is to utilize the ATMEGA1284 to build a jukebox. The player can pause or skip through the stored songs loaded into the jukebox. The songs will be accessible by cycling through a list of songs displayed on the LCD screen with buttons affixed to the breadboard.

Component Specifications:

- ATMEGA 1284

- AVR Studio 7

Functionality Specifications:

Inputs: PA0, PA1, PA2, PA3, PA4

Outputs: LCD Screen, Speaker

- JukeBox with preloaded songs

  o Play, Pause, Skip Song, Back Song, Stop Song

JukeBox Details:

- **PA0** will function as a **PLAY** button and enables functionality of PA1 and PA2

- **PA1** will function as a **PAUSE** button to pause the song from wherever it is currently playing.

  o Pressing PA1 again will **STOP** the song completely and return to the select menu

- **PA2** will be a **RESET** which starts the song over from the beginning

- **PA4** will iterate through the song list or skip the currently playing song to the beginning of the next once pressed

- **PA5** will reverse through the song list or skip the currently playing song to the beginning of the previous song once pressed.

- Songs will be stored as frequency arrays which are accessed by the Pulse Width Modifier and transmitted from **PB6** to the **speaker**.

Pin Diagram

Left	Pin	Pin	Right
(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/$\overline{SS}$) 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)
$\overline{RESET}$	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)
(PCINT25/TXD0) PD1	15	26	PC4 (TDO/PCINT20)
(PCINT26/RXD1/INT0) PD2	16	25	PC3 (TMS/PCINT19)
(PCINT27/TXD1/INT1) PD3	17	24	PC2 (TCK/PCINT18)
(PCINT28/XCK1/OC1B) PD4	18	23	PC1 (SDA/PCINT17)
(PCINT29/OC1A) PD5	19	22	PC0 (SCL/PCINT16)
(PCINT30/OC2B/ICP) PD6	20	21	PD7 (OC2A/PCINT31)

Play
Pause/Back
Reset
Skip
Reverse

Speaker OUT

LCD Output