[redacted]

Design Assignment 5

Student Name: [redacted]
Student #: [redacted]
Student Email: [redacted]
Primary Github address: https://github.com/DylanCaz/Submission_DA
Directory:
https://github.com/DylanCaz/Submission_DA/tree/main/Design_Assignments_sub/DA_5_sub

Submit the following for all Labs:

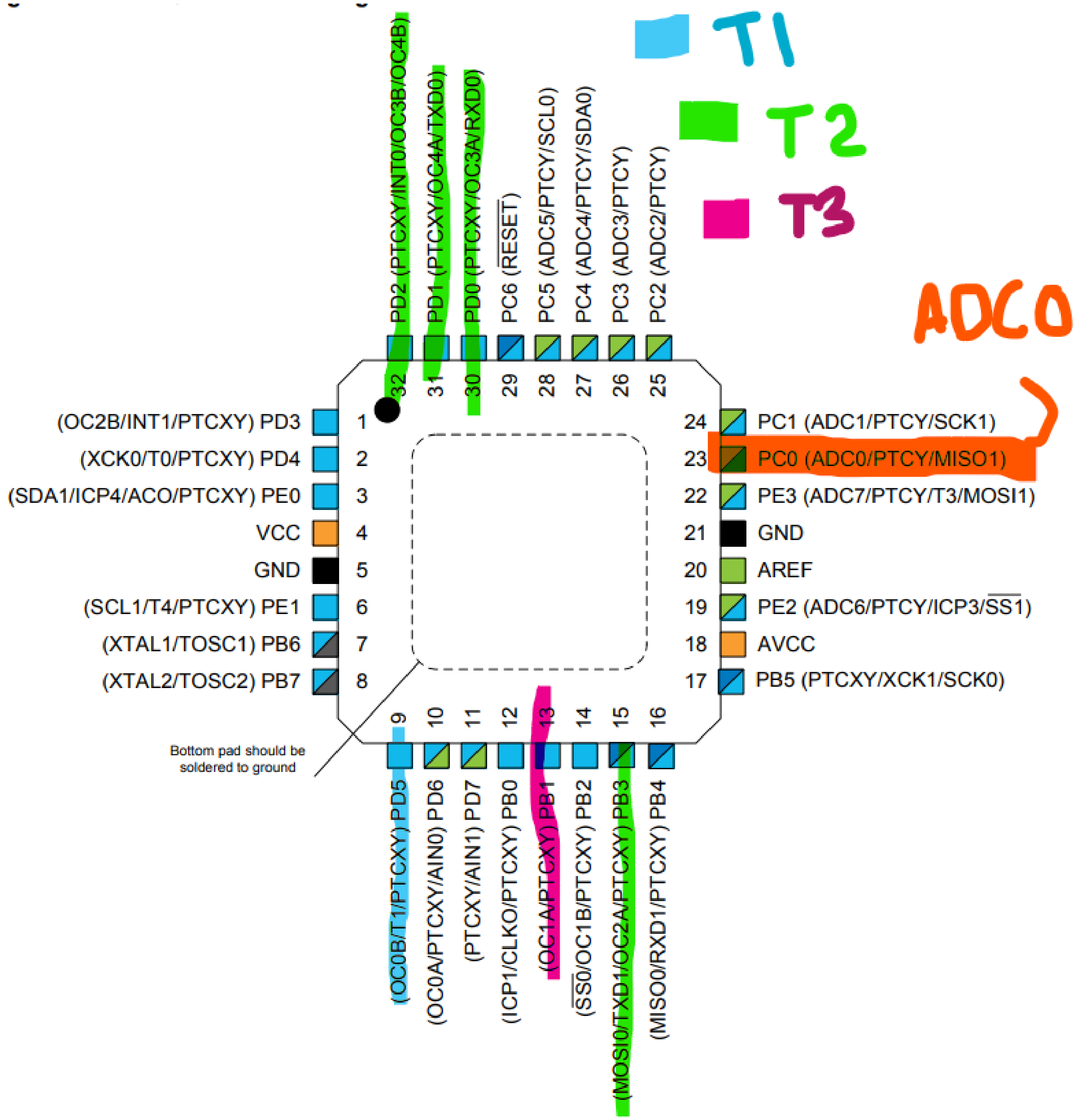
1. In the document, for each task submit the modified or included code (only) with highlights and justifications of the modifications. Also, include the comments.

2. Use the previously create a Github repository with a random name (no CPE/301, Lastname, Firstname). Place all labs under the root folder ESD301/DA, sub-folder named LABXX, with one document and one video link file for each lab, place modified asm/c files named as LabXX-TYY.asm/c.

3. If multiple asm/c files or other libraries are used, create a folder LabXX-TYY and place these files inside the folder.

4. The folder should have a) Word document (see template), b) source code file(s) and other include files, c) text file with youtube video links (see template).

1. COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS



2. DEVELOPED CODE OF TASK 1

```
/*******************************
Dylan Cazares
CPE301 - Design Assignment 5
Task 1
*******************************/
#define F_CPU 16000000UL
#include <avr/io.h>
#include <util/delay.h>
void adc_init(void);
void read_adc(void);
void timer_init(void);
float duty;

int main(void)
{
    DDRD |= (1 << 5) ; // setting PD5 PD6 as an output
    timer_init();
    adc_init();
    while (1)
    {
                 read_adc(); // read Potentiometer Value
                 duty = (ADC/1023.0) * 155.0; // scale for percentage
                 OCR0B = duty;
                 // ClockWise
                 PORTD |= (1 << 5);
    }
}

void adc_init(void)
{
    ADMUX |= (0 << REFS1) | // Reference Selection Bits
    (1 << REFS0) | // AVCC with external capacitor at AREF pin
    (0 << ADLAR) | // Left adjusts
    (0 << MUX3) | (0 << MUX2)| (0 << MUX1) | (0 << MUX0); // Channel 0 (PC0)

    ADCSRA = (1 << ADEN) | // ADC Enable
    (0 << ADSC) | // ADC Start Conversion
    (0 << ADATE) | //ADC Auto Trigger Enab8le
    (0 << ADIF) | // ADC Interrupt Flag
    (0 << ADIE) | // ADC Interrupt Enable
    (1 << ADPS2) | (0 << ADPS1) | (1 << ADPS0); // prescaler 64
}
void read_adc(void)
{
    ADCSRA |= (1 << ADSC);
    while(ADCSRA & (1 << ADSC));
}

void timer_init(void)
{
    //FAST PWM
    TCCR0A =
    (0 << COM0A1) | // Normal Port Operation
    (0 << COM0A0) | // Normal Port Operation
    (1 << COM0B1) | // Clear OC0A on Compare Match
    (0 << COM0B0) | // Set )C0A at Bottom (non-inverting mode)
    (1 << WGM01) | (1 << WGM00); // Fast PWM Mode
    TCCR0B =
    (0 << FOC0A) | // Input Capture Noise Canceler
    (0 << FOC0B) | // Input Capture Edge Select
    (1 << WGM02) | // Top = OCRA,
    (1 << CS02) | (0 << CS01) | (1 << CS00); // Prescaler 1024
    OCR0A = 155; // FOCnx = 100Hz

}
```

3. DEVELOPED CODE OF TASK 2

```
/***********************************
Dylan Cazares
CPE301 - Design Assignment 5
Task 2
***********************************/
#define F_CPU 16000000UL
#include <avr/io.h>
#include <util/delay.h>
#include <avr/interrupt.h>
void adc_init(void);
void read_adc();
void timer_init();
int main(void)
{
    DDRD |= 0x0F; // Set PD0, PD1, PD2, PD3 as an Output
    timer_init();
    adc_init();
    while (1)
    {
          read_adc();
          // 100ms period at lowest ADC val
          OCR1A = (((ADC) * (3124.0)) / (1023.0));
          if((PIND & 0x10) == 0x10){
                 PORTD = 0x09;
                 while((TIFR1 & 0x2) != 0x2); // OCF1A (Wait for flag to match)
                 TIFR1 |= (1 << OCF1A); // Clear flag
                 PORTD = 0x03;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
                 PORTD = 0x06;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
                 PORTD = 0x0C;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
          }
          else
          {
                 PORTD = 0x0C;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
                 PORTD = 0x06;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
                 PORTD = 0x03;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
                 PORTD = 0x09;
                 while((TIFR1 & 0x2) != 0x2);
                 TIFR1 |= (1 << OCF1A);
          }
    }
}
void adc_init(void)
{
    ADMUX =
    (0 << REFS1) | (1 << REFS0)| // AVCC w/ external cap at AREF pin
    (0 << ADLAR)| // ADC Left Adjust Result
    (0 << MUX3) | (0 << MUX2)| (0<<MUX1)| (0<<MUX0); // Channel ADC0
    ADCSRA =
    (1 << ADEN) | // ADC Enable
    (0 << ADSC) | // ADC Start Conversion Disable
    (0 << ADATE) | // ADC Auto Trigger Disable
    (0 << ADIF) | // ADC Interrupt Flag Disable
    (0 << ADIE) | // ADC Interrupt Disable
    (1 << ADPS2) | (1 << ADPS1) | (1 << ADPS0); // Prescaler 128
}
void read_adc()
{
    ADCSRA |= (1 << ADSC); // Start ADC conversion
    while(ADCSRA & (1 << ADSC));
}
void timer_init()
{
    TCCR1B |= (1 << WGM12) | (1 << CS12); // Prescaler 256, CTC Mode
}
```

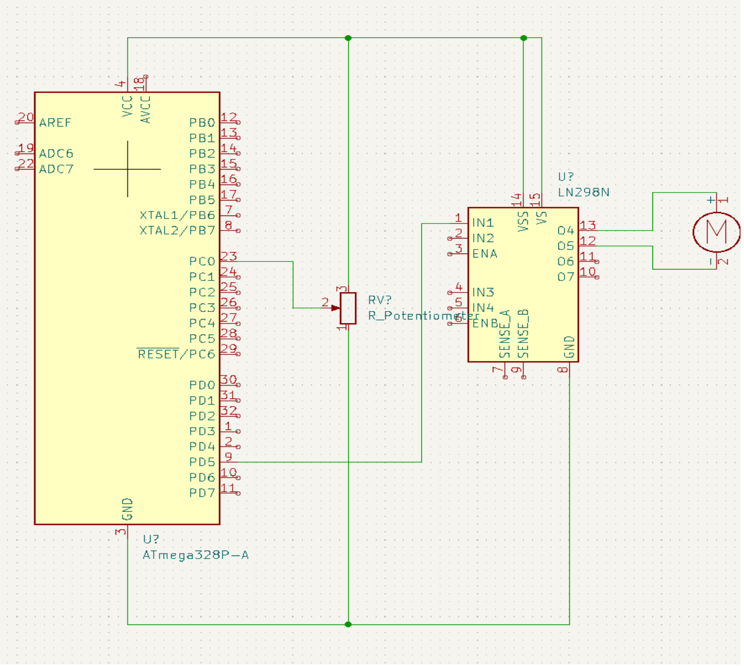
4. DEVELOPED CODE OF TASK 3

```
/************************************
Dylan Cazares
CPE301 - Design Assignment 5
Task 3
************************************/
#define F_CPU 16000000UL
#include <avr/io.h>
#include <util/delay.h>
void adc_init(void);
void read_adc(void);
void timer_init(void);

int main(void)
{
       DDRB = (1 << 1); // Setting PB1 as an output
       adc_init();
       timer_init();
       while (1)
        {
              read_adc();
              OCR1A = 0.48 * ADC + 150;
        }
}

void adc_init(void)
{
       ADMUX =
       (0 << REFS1) | (1 << REFS0)| // AVCC w/ external cap at AREF pin
       (0 << ADLAR)| // ADC Left Adjust Result
       (0 << MUX3) | (0 << MUX2)| (0<<MUX1)| (0<<MUX0); // Channel ADC0
       ADCSRA =
       (1 << ADEN) | // ADC Enable
       (0 << ADSC) | // ADC Start Conversion Disable
       (1 << ADATE) | // ADC Auto Trigger Disable
       (0 << ADIF) | // ADC Interrupt Flag Disable
```

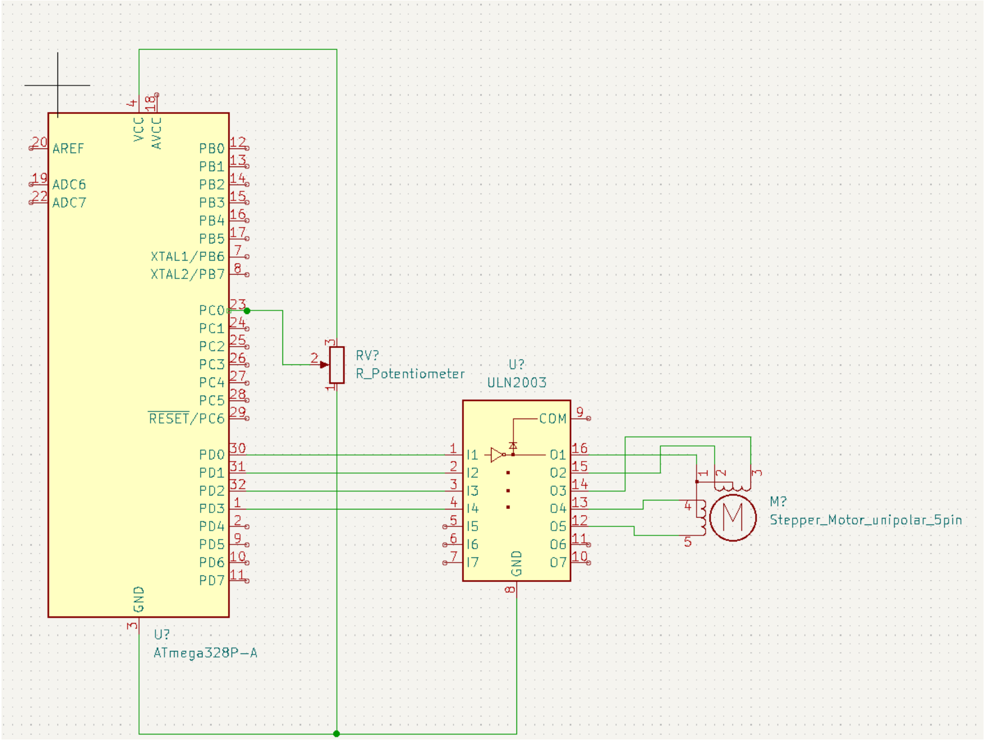
```
        (1 << ADIE) | // ADC Interrupt Enable
        (1 << ADPS2) | (1 << ADPS1) | (1 << ADPS0); // Prescaler 128

        ADCSRB = 0x00; //set auto trigger to free running mode
}
void read_adc(void)
{
        ADCSRA |= (1 << ADSC); // Start ADC conversion
}
void timer_init(void)
{
        TCCR1A |=
        (1 << COM1A1) | // Clear OC1A on compare match
        (0 << COM1A0) | // Clear OC1A on compare match
        (1 << COM1B1) | // Clear OC1B on compare match
        (0 << COM1B0) | // Clear OC1B on compare match
        (1 << WGM11) | // Mode Selection bits
        (0 << WGM10); // PWM mode

        TCCR1B |=
        (0 << ICNC1) | // Input Capture Noise Canceler
        (0 << ICES1) | // Input Capture Edge Select
        (1 << WGM13) | //Wavefrom Generation Mode
        (1 << WGM12) | //Fast PWM Mode
        (0 << CS12) | // Ckock Select
        (1 << CS11) | // Prescaler = 64
        (1 << CS10);

        ICR1 = 4999; // Period = 20ms (50Hz)
        OCR1A = 150;

}
```

5. SCHEMATICS

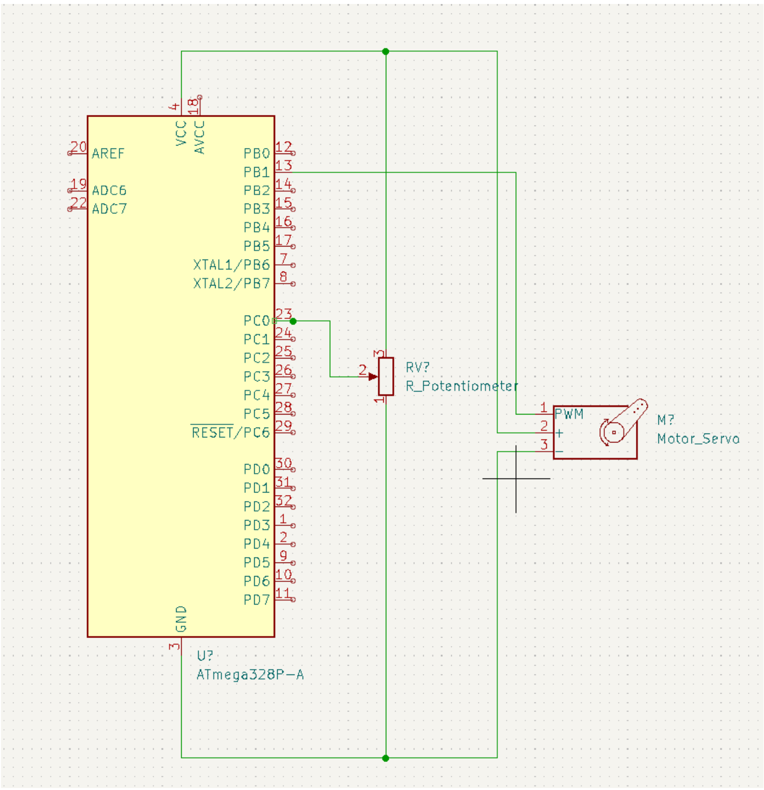
Task 1



Task 2

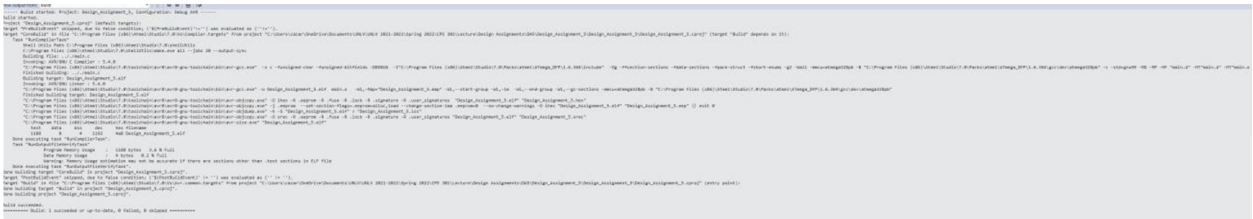

4
VCC
18
AVCC
20 AREF
19 ADC6
22 ADC7
PB0 12
PB1 13
PB2 14
PB3 15
PB4 16
PB5 17
XTAL1/PB6 7
XTAL2/PB7 8
PC0 23
PC1 24
PC2 25
PC3 26
PC4 27
PC5 28
RESET/PC6 29
PD0 30
PD1 31
PD2 32
PD3 1
PD4 2
PD5 9
PD6 10
PD7 11
GND
3
U?
ATmega328P-A
3
2
1
RV?
R_Potentiometer
U?
ULN2003
COM 9
1 I1
2 I2
3 I3
4 I4
5 I5
6 I6
7 I7
O1 16
O2 15
O3 14
O4 13
O5 12
O6 11
O7 10
GND
8
1
2
3
4
5
M
M?
Stepper_Motor_unipolar_5pin

Task 3


4
VCC
18
AVCC
20 AREF
19 ADC6
22 ADC7
PB0 12
PB1 13
PB2 14
PB3 15
PB4 16
PB5 17
XTAL1/PB6 7
XTAL2/PB7 8
PC0 23
PC1 24
PC2 25
PC3 26
PC4 27
PC5 28
RESET/PC6 29
PD0 30
PD1 31
PD2 32
PD3 1
PD4 2
PD5 9
PD6 10
PD7 11
GND
3
U?
ATmega328P-A
3
2
1
RV?
R_Potentiometer
1 PWM
2 +
3 −
M?
Motor_Servo

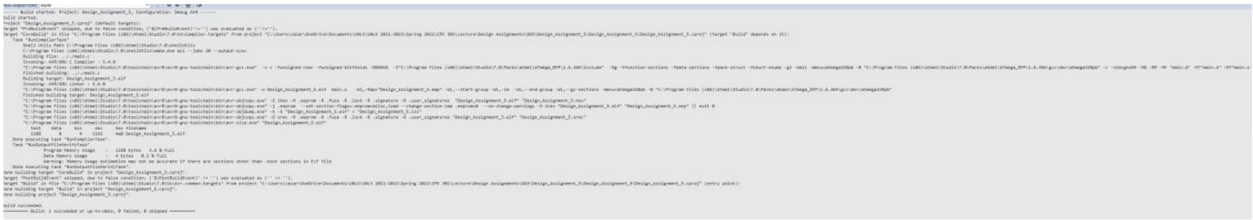
6. SCREENSHOTS OF EACH TASK OUTPUT (ATMEL STUDIO OUTPUT)

Task 1



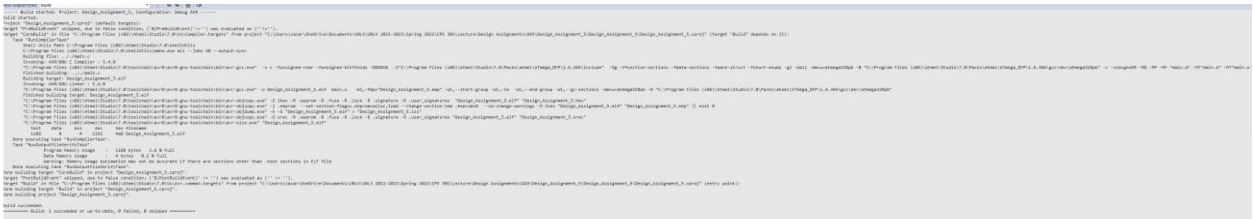
```
------ Build started: Project: Design_Assignment_5, Configuration: Debug AVR ------
uild started.
roject "Design_Assignment_5.cproj" (default targets):
arget "PreBuildEvent" skipped, due to false condition; ('$(PreBuildEvent)'!='') was evaluated as (''!='').
arget "CoreBuild" in file "C:\Program Files (x86)\Atmel\Studio\7.0\Vs\Compiler.targets" from project "C:\Users\cazar\OneDrive\Documents\UNLV\UNLV 2021-2022\Spring 2022\CPE 301\Lecture\Design Assignments\DA5\Design_Assignment_5\Design_Assignment_5\Design_Assignment_5.cproj" (target "Build" depends on it):
    Task "RunCompilerTask"
        Shell Utils Path C:\Program Files (x86)\Atmel\Studio\7.0\shellUtils
        C:\Program Files (x86)\Atmel\Studio\7.0\shellUtils\make.exe all --jobs 20 --output-sync
        Building file: .././main.c
        Invoking: AVR/GNU C Compiler : 5.4.0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-gcc.exe"  -x c -funsigned-char -funsigned-bitfields -DDEBUG  -I"C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\include"  -Og -ffunction-sections -fdata-sections -fpack-struct -fshort-enums -g2 -Wall -mmcu=atmega328pb -B "C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\gcc\dev\atmega328pb" -c -std=gnu99 -MD -MP -MF "main.d" -MT"main.d" -MT"main.o
        Finished building: .././main.c
        Building target: Design_Assignment_5.elf
        Invoking: AVR/GNU Linker : 5.4.0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-gcc.exe" -o Design_Assignment_5.elf  main.o   -Wl,-Map="Design_Assignment_5.map" -Wl,--start-group -Wl,-lm  -Wl,--end-group -Wl,--gc-sections -mmcu=atmega328pb -B "C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\gcc\dev\atmega328pb"
        Finished building target: Design_Assignment_5.elf
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -O ihex -R .eeprom -R .fuse -R .lock -R .signature -R .user_signatures  "Design_Assignment_5.elf" "Design_Assignment_5.hex"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -j .eeprom  --set-section-flags=.eeprom=alloc,load --change-section-lma .eeprom=0  --no-change-warnings -O ihex "Design_Assignment_5.elf" "Design_Assignment_5.eep" || exit 0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objdump.exe" -h -S "Design_Assignment_5.elf" > "Design_Assignment_5.lss"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -O srec -R .eeprom -R .fuse -R .lock -R .signature -R .user_signatures "Design_Assignment_5.elf" "Design_Assignment_5.srec"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-size.exe" "Design_Assignment_5.elf"
           text    data     bss     dec     hex filename
           1188       0       4    1192     4a8 Design_Assignment_5.elf
    Done executing task "RunCompilerTask".
    Task "RunOutputFileVerifyTask"
                Program Memory Usage    :   1188 bytes   3.6 % Full
                Data Memory Usage       :   4 bytes   0.2 % Full
                Warning: Memory Usage estimation may not be accurate if there are sections other than .text sections in ELF file
    Done executing task "RunOutputFileVerifyTask".
one building target "CoreBuild" in project "Design_Assignment_5.cproj".
arget "PostBuildEvent" skipped, due to false condition; ('$(PostBuildEvent)' != '') was evaluated as ('' != '').
arget "Build" in file "C:\Program Files (x86)\Atmel\Studio\7.0\Vs\Avr.common.targets" from project "C:\Users\cazar\OneDrive\Documents\UNLV\UNLV 2021-2022\Spring 2022\CPE 301\Lecture\Design Assignments\DA5\Design_Assignment_5\Design_Assignment_5\Design_Assignment_5.cproj" (entry point):
one building target "Build" in project "Design_Assignment_5.cproj".
one building project "Design_Assignment_5.cproj".

uild succeeded.
========== Build: 1 succeeded or up-to-date, 0 failed, 0 skipped ==========
```

Task 2



```
------ Build started: Project: Design_Assignment_5, Configuration: Debug AVR ------
uild started.
roject "Design_Assignment_5.cproj" (default targets):
arget "PreBuildEvent" skipped, due to false condition; ('$(PreBuildEvent)'!='') was evaluated as (''!='').
arget "CoreBuild" in file "C:\Program Files (x86)\Atmel\Studio\7.0\Vs\Compiler.targets" from project "C:\Users\cazar\OneDrive\Documents\UNLV\UNLV 2021-2022\Spring 2022\CPE 301\Lecture\Design Assignments\DA5\Design_Assignment_5\Design_Assignment_5\Design_Assignment_5.cproj" (target "Build" depends on it):
    Task "RunCompilerTask"
        Shell Utils Path C:\Program Files (x86)\Atmel\Studio\7.0\shellUtils
        C:\Program Files (x86)\Atmel\Studio\7.0\shellUtils\make.exe all --jobs 20 --output-sync
        Building file: .././main.c
        Invoking: AVR/GNU C Compiler : 5.4.0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-gcc.exe"  -x c -funsigned-char -funsigned-bitfields -DDEBUG  -I"C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\include"  -Og -ffunction-sections -fdata-sections -fpack-struct -fshort-enums -g2 -Wall -mmcu=atmega328pb -B "C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\gcc\dev\atmega328pb" -c -std=gnu99 -MD -MP -MF "main.d" -MT"main.d" -MT"main.o
        Finished building: .././main.c
        Building target: Design_Assignment_5.elf
        Invoking: AVR/GNU Linker : 5.4.0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-gcc.exe" -o Design_Assignment_5.elf  main.o   -Wl,-Map="Design_Assignment_5.map" -Wl,--start-group -Wl,-lm  -Wl,--end-group -Wl,--gc-sections -mmcu=atmega328pb -B "C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\gcc\dev\atmega328pb"
        Finished building target: Design_Assignment_5.elf
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -O ihex -R .eeprom -R .fuse -R .lock -R .signature -R .user_signatures  "Design_Assignment_5.elf" "Design_Assignment_5.hex"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -j .eeprom  --set-section-flags=.eeprom=alloc,load --change-section-lma .eeprom=0  --no-change-warnings -O ihex "Design_Assignment_5.elf" "Design_Assignment_5.eep" || exit 0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objdump.exe" -h -S "Design_Assignment_5.elf" > "Design_Assignment_5.lss"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -O srec -R .eeprom -R .fuse -R .lock -R .signature -R .user_signatures "Design_Assignment_5.elf" "Design_Assignment_5.srec"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-size.exe" "Design_Assignment_5.elf"
           text    data     bss     dec     hex filename
           1188       0       4    1192     4a8 Design_Assignment_5.elf
    Done executing task "RunCompilerTask".
    Task "RunOutputFileVerifyTask"
                Program Memory Usage    :   1188 bytes   3.6 % Full
                Data Memory Usage       :   4 bytes   0.2 % Full
                Warning: Memory Usage estimation may not be accurate if there are sections other than .text sections in ELF file
    Done executing task "RunOutputFileVerifyTask".
one building target "CoreBuild" in project "Design_Assignment_5.cproj".
arget "PostBuildEvent" skipped, due to false condition; ('$(PostBuildEvent)' != '') was evaluated as ('' != '').
arget "Build" in file "C:\Program Files (x86)\Atmel\Studio\7.0\Vs\Avr.common.targets" from project "C:\Users\cazar\OneDrive\Documents\UNLV\UNLV 2021-2022\Spring 2022\CPE 301\Lecture\Design Assignments\DA5\Design_Assignment_5\Design_Assignment_5\Design_Assignment_5.cproj" (entry point):
one building target "Build" in project "Design_Assignment_5.cproj".
one building project "Design_Assignment_5.cproj".

uild succeeded.
========== Build: 1 succeeded or up-to-date, 0 failed, 0 skipped ==========
```

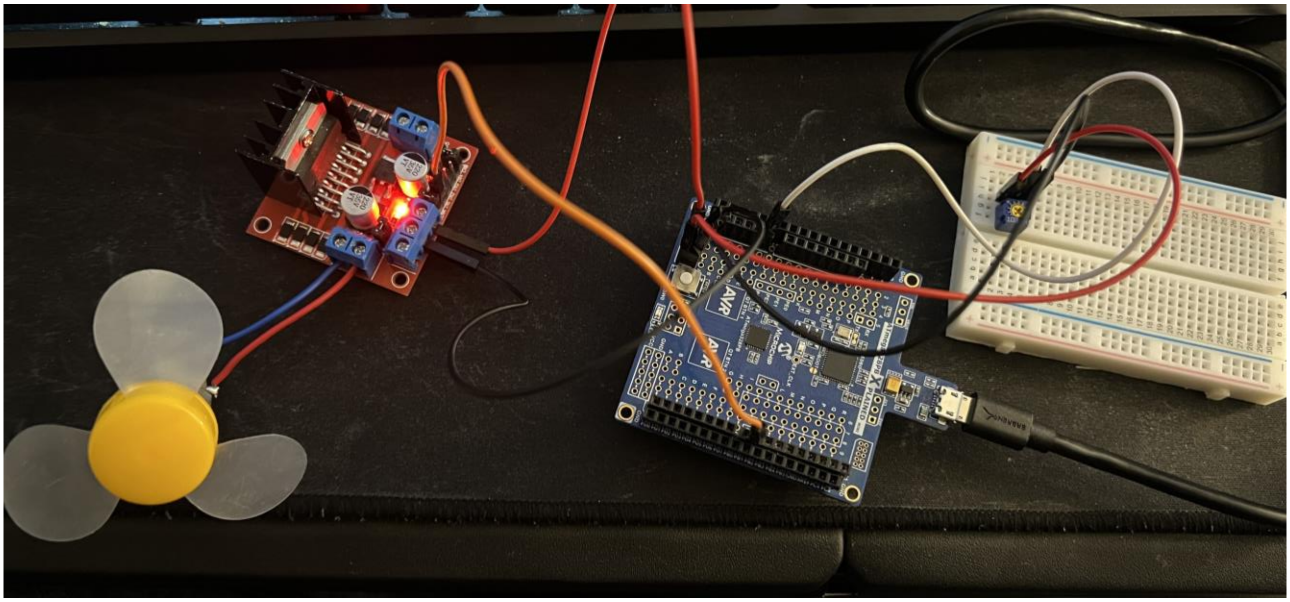
Task 3



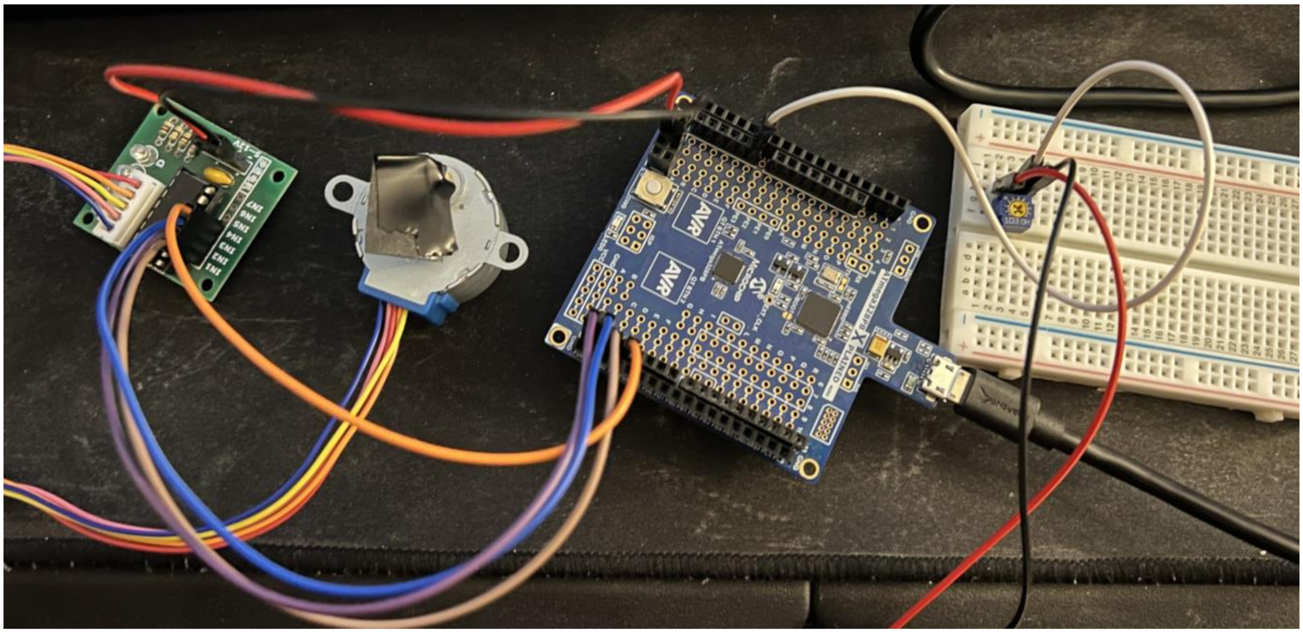
```
------ Build started: Project: Design_Assignment_5, Configuration: Debug AVR ------
uild started.
roject "Design_Assignment_5.cproj" (default targets):
arget "PreBuildEvent" skipped, due to false condition; ('$(PreBuildEvent)'!='') was evaluated as (''!='').
arget "CoreBuild" in file "C:\Program Files (x86)\Atmel\Studio\7.0\Vs\Compiler.targets" from project "C:\Users\cazar\OneDrive\Documents\UNLV\UNLV 2021-2022\Spring 2022\CPE 301\Lecture\Design Assignments\DA5\Design_Assignment_5\Design_Assignment_5\Design_Assignment_5.cproj" (target "Build" depends on it):
    Task "RunCompilerTask"
        Shell Utils Path C:\Program Files (x86)\Atmel\Studio\7.0\shellUtils
        C:\Program Files (x86)\Atmel\Studio\7.0\shellUtils\make.exe all --jobs 20 --output-sync
        Building file: .././main.c
        Invoking: AVR/GNU C Compiler : 5.4.0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-gcc.exe"  -x c -funsigned-char -funsigned-bitfields -DDEBUG  -I"C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\include"  -Og -ffunction-sections -fdata-sections -fpack-struct -fshort-enums -g2 -Wall -mmcu=atmega328pb -B "C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\gcc\dev\atmega328pb" -c -std=gnu99 -MD -MP -MF "main.d" -MT"main.d" -MT"main.o
        Finished building: .././main.c
        Building target: Design_Assignment_5.elf
        Invoking: AVR/GNU Linker : 5.4.0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-gcc.exe" -o Design_Assignment_5.elf  main.o   -Wl,-Map="Design_Assignment_5.map" -Wl,--start-group -Wl,-lm  -Wl,--end-group -Wl,--gc-sections -mmcu=atmega328pb -B "C:\Program Files (x86)\Atmel\Studio\7.0\Packs\atmel\ATmega_DFP\1.6.364\gcc\dev\atmega328pb"
        Finished building target: Design_Assignment_5.elf
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -O ihex -R .eeprom -R .fuse -R .lock -R .signature -R .user_signatures  "Design_Assignment_5.elf" "Design_Assignment_5.hex"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -j .eeprom  --set-section-flags=.eeprom=alloc,load --change-section-lma .eeprom=0  --no-change-warnings -O ihex "Design_Assignment_5.elf" "Design_Assignment_5.eep" || exit 0
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objdump.exe" -h -S "Design_Assignment_5.elf" > "Design_Assignment_5.lss"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-objcopy.exe" -O srec -R .eeprom -R .fuse -R .lock -R .signature -R .user_signatures "Design_Assignment_5.elf" "Design_Assignment_5.srec"
        "C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\bin\avr-size.exe" "Design_Assignment_5.elf"
           text    data     bss     dec     hex filename
           1188       0       4    1192     4a8 Design_Assignment_5.elf
    Done executing task "RunCompilerTask".
    Task "RunOutputFileVerifyTask"
                Program Memory Usage    :   1188 bytes   3.6 % Full
                Data Memory Usage       :   4 bytes   0.2 % Full
                Warning: Memory Usage estimation may not be accurate if there are sections other than .text sections in ELF file
    Done executing task "RunOutputFileVerifyTask".
one building target "CoreBuild" in project "Design_Assignment_5.cproj".
arget "PostBuildEvent" skipped, due to false condition; ('$(PostBuildEvent)' != '') was evaluated as ('' != '').
arget "Build" in file "C:\Program Files (x86)\Atmel\Studio\7.0\Vs\Avr.common.targets" from project "C:\Users\cazar\OneDrive\Documents\UNLV\UNLV 2021-2022\Spring 2022\CPE 301\Lecture\Design Assignments\DA5\Design_Assignment_5\Design_Assignment_5\Design_Assignment_5.cproj" (entry point):
one building target "Build" in project "Design_Assignment_5.cproj".
one building project "Design_Assignment_5.cproj".

uild succeeded.
========== Build: 1 succeeded or up-to-date, 0 failed, 0 skipped ==========
```

7. SCREENSHOT OF EACH DEMO (BOARD SETUP)

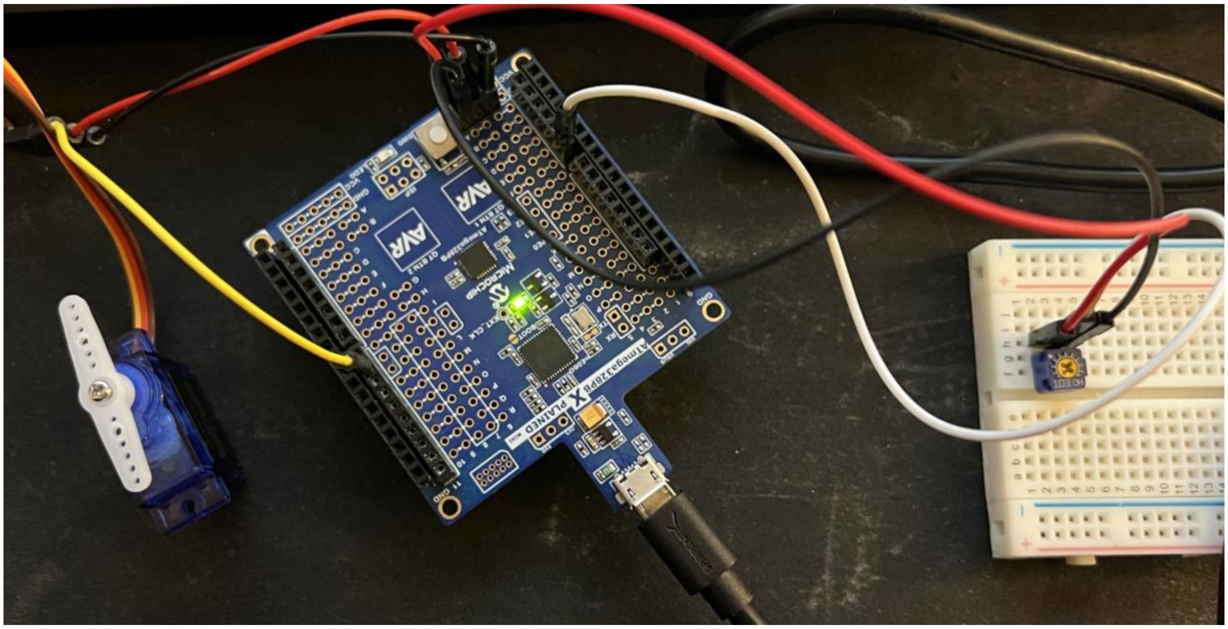
Task 1



Task 2



Task 3



8. VIDEO LINKS OF EACH DEMO

[TASK 1]()
[TASK 2]()
[TASK 3]()

9. GITHUB LINK OF THIS DA

https://github.com/DylanCaz/Submission_DA/tree/main/Design_Assignments_sub/DA_5_sub

Student Academic Misconduct Policy
http://studentconduct.unlv.edu/misconduct/policy.html

"This assignment submission is my own, original work".

[redacted]