**STATE UNIVERSITY OF BANGLADESH (SUB)**

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**Final Assignment**

**Course No: CSE-0406**

**Course Name :** **computer peripherals and interfacing**

**Semester: Fall 2021**

**Submitted to:**

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**Experiment Name:** **Take 4 DC motors (numbered 1 to 4) and a keypad. The keypad will take two digits. The first digit will be the number of the DC motor which you want to rotate. The second digit will indicate the direction of rotation (1 for clockwise, 2 for anticlockwise).   
For example, if the keys 2 and 1 are pressed on the keypad, the second DC motor will keep rotating in the clockwise direction**. 

**Code:**

**#include <Keypad.h>**

**#define dw digitalWrite**

**const byte ROWS = 4; // Four rows**

**const byte COLS = 4; // Four columns as this is a 4\*4 Keypad**

**char keys[ROWS][COLS] = {**

**{'7', '8', '9', '/'},**

**{'4', '5', '6', '\*'},**

**{'1', '2', '3', '-'},**

**{'c', '0', '=', '+'}**

**}; // defining the keys in the keypad**

**//here 13, 12, 8, 7 pins are disconnected**

**byte rowPins[ROWS] = {13, 12, 4, 8}; // Connect keypad ROW0, ROW1, ROW2 and ROW3 to these Arduino pins.**

**byte colPins[COLS] = {2, 1, 0, 7}; // Connect keypad COL0, COL1, COL2 and COL3 to these Arduino pins.**

**Keypad kpd = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS ); // Create the Keypad variable to identify and store the pressed key.**

**struct pin {**

**int p1 = 0;**

**int p2 = 0;**

**pin(int \_a = 0, int \_b = 0) {**

**p1 = \_a;**

**p2 = \_b;**

**}**

**}; /// Motor Pin Structure**

**pin DCmotor[4] = {{0, 0}, {11, 10}, {9, 6}, {5, 3}}; /// storing every motor pin number**

**void setup() {**

**for (int i = 0; i < 4; i++) {**

**pinMode(DCmotor[i].p1, OUTPUT);**

**pinMode(DCmotor[i].p2, OUTPUT);**

**} // setting up every pin mode**

**}**

**void clockwise(pin motor){**

**dw(motor.p1, HIGH);**

**dw(motor.p2, LOW);**

**}/// clockwise motor rotation**

**void anti\_clockwise(pin motor){**

**dw(motor.p2, HIGH);**

**dw(motor.p1, LOW);**

**}//anti clockwise motor rotation**

**void off(pin motor){**

**dw(motor.p1, LOW);**

**dw(motor.p2, LOW);**

**}//motor turn off**

**int motorNo = 0; // indicates which motor should rotate**

**void loop() {**

**char key = kpd.getKey(); /// get key from keypad**

**for(int i = 1; i < 4; i++){**

**off(DCmotor[i]); /// initially turn off every motor**

**}**

**if (key != 0) {**

**if (key >= '1' and key <= '3') {**

**if (!motorNo) motorNo = key - '0'; /// checking if 1st digit entered**

**else if(key >= '1' and key <='2') {**

**if (key == '1') clockwise(DCmotor[motorNo]);**

**if (key == '2') anti\_clockwise(DCmotor[motorNo]);**

**delay(1000);**

**motorNo = 0;**

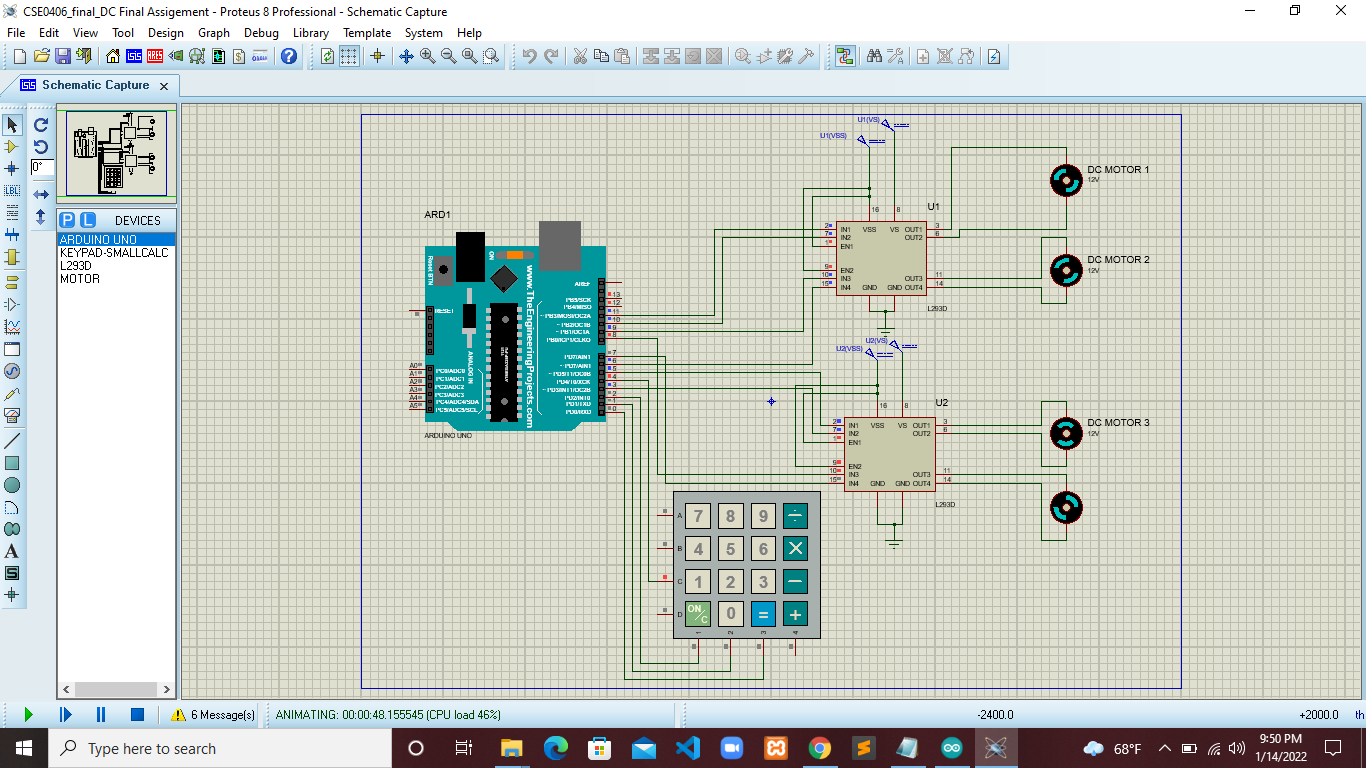
**}**

**}**

**}**

**}**

**The Proteus screenshot:**

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