Homework #2

1. Display "Hi You did good job" word by word, and each word in one frame.

Code:

```
//For each digit, pin 3 controls 1st segment, 4 controls 2nd, and so on
int digit1[][2] = {{3, 1}, {4, 2}, {5, 4}, {6, 10}, {7, 9}, {8, 7}, {9, 6}};

int digit2[][2] = {{30, 1}, {31, 2}, {32, 4}, {33, 10}, {34, 9}, {35, 7}, {36, 6}};

int digit3[][2] = {{37, 1}, {38, 2}, {39, 4}, {40, 10}, {41, 9}, {42, 7}, {43, 6}};

int digit4[][2] = {{44, 1}, {45, 2}, {46, 4}, {47, 10}, {48, 9}, {49, 7}, {50, 6}};

//common size of 4 digit (2 dimensional) arrays, return 7
int common_size = sizeof(digit1) / sizeof(digit1[0]);

void setup() {
  for (int i = 0; i < common_size; i++) {
    //assign output pins and turn off all digits
    pinMode(digit1[i][0], OUTPUT);
    digitalWrite(digit1[i][0], HIGH);

    pinMode(digit2[i][0], OUTPUT);
    digitalWrite(digit2[i][0], HIGH);

    pinMode(digit3[i][0], OUTPUT);
    digitalWrite(digit3[i][0], HIGH);

    pinMode(digit4[i][0], OUTPUT);
```

```
    digitalWrite(digit4[i][0], HIGH);
  }
}

void loop() {
  /* Write Hi */
  //Write H
  for (int i = 0; i < common_size; i++) {
    if (digit2[i][1] == 9 || digit2[i][1] == 1 || digit2[i][1] == 10 || digit2[i][1] == 6 || digit2[i][1] == 4) {
      digitalWrite(digit2[i][0], LOW);
    }
  }
  //Write i
  for (int i = 0; i < common_size; i++) {
    if (digit1[i][1] == 4) {
      digitalWrite(digit1[i][0], LOW);
    }
  }
  delay(1000);

  for (int i = 0; i < common_size; i++) {
    digitalWrite(digit1[i][0], HIGH);
  }
  for (int i = 0; i < common_size; i++) {
    digitalWrite(digit2[i][0], HIGH);
  }
  delay(1000);

  /* Write You */
```

```
//Write Y
for (int i = 0; i < common_size; i++) {
  if (digit3[i][1] == 10 || digit3[i][1] == 9 || digit3[i][1] == 6 || digit3[i][1] == 4 || digit3[i][1] == 2) {
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write o
for (int i = 0; i < common_size; i++) {
  if (digit2[i][1] == 1 || digit2[i][1] == 2 || digit2[i][1] == 4 || digit2[i][1] == 10) {
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write u
for (int i = 0; i < common_size; i++) {
  if (digit1[i][1] == 1 || digit1[i][1] == 2 || digit1[i][1] == 4) {
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for (int i = 0; i < common_size; i++) {
  digitalWrite(digit1[i][0], HIGH);
}
for (int i = 0; i < common_size; i++) {
  digitalWrite(digit2[i][0], HIGH);
}
for (int i = 0; i < common_size; i++) {
  digitalWrite(digit3[i][0], HIGH);
}
```

```
delay(1000);


/* Write  did */
//Write d
for (int i = 0; i < common_size; i++) {
  if (digit3[i][1] == 6 || digit3[i][1] == 4 || digit3[i][1] == 10 || digit3[i][1] == 1 || digit3[i][1] == 2) {
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write i
for (int i = 0; i < common_size; i++) {
  if (digit2[i][1] == 4) {
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write d
for (int i = 0; i < common_size; i++) {
  if (digit1[i][1] == 6 || digit1[i][1] == 4 || digit1[i][1] == 10 || digit1[i][1] == 1 || digit1[i][1] == 2) {
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);


for (int i = 0; i < common_size; i++) {
  digitalWrite(digit1[i][0], HIGH);
}
for (int i = 0; i < common_size; i++) {
  digitalWrite(digit2[i][0], HIGH);
}
```

```
 for (int i = 0; i < common_size; i++) {
  digitalWrite(digit3[i][0], HIGH);
 }
 delay(1000);

 /* Write good */
 //Write g
 for (int i = 0; i < common_size; i++) {
  if (digit4[i][1] == 7 || digit4[i][1] == 9 || digit4[i][1] == 10 || digit4[i][1] == 6 || digit4[i][1] == 4 ||
digit4[i][1] == 2) {
    digitalWrite(digit4[i][0], LOW);
  }
 }
 //Write o
 for (int i = 0; i < common_size; i++) {
  if (digit3[i][1] == 1 || digit3[i][1] == 2 || digit3[i][1] == 4 || digit3[i][1] == 10) {
    digitalWrite(digit3[i][0], LOW);
  }
 }
 //Write o
 for (int i = 0; i < common_size; i++) {
  if (digit2[i][1] == 1 || digit2[i][1] == 2 || digit2[i][1] == 4 || digit2[i][1] == 10) {
    digitalWrite(digit2[i][0], LOW);
  }
 }
 //Write d
 for (int i = 0; i < common_size; i++) {
  if (digit1[i][1] == 6 || digit1[i][1] == 4 || digit1[i][1] == 10 || digit1[i][1] == 1 || digit1[i][1] == 2) {
    digitalWrite(digit1[i][0], LOW);
```

```
  }
}
delay(1000);

for (int i = 0; i < common_size; i++) {
  digitalWrite(digit1[i][0], HIGH);
}
for (int i = 0; i < common_size; i++) {
  digitalWrite(digit2[i][0], HIGH);
}
for (int i = 0; i < common_size; i++) {
  digitalWrite(digit3[i][0], HIGH);
}
for (int i = 0; i < common_size; i++) {
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write  Job */
//Write J
for (int i = 0; i < common_size; i++) {
  if (digit3[i][1] == 6 || digit3[i][1] == 4 || digit3[i][1] == 2) {
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write o
for (int i = 0; i < common_size; i++) {
  if (digit2[i][1] == 1 || digit2[i][1] == 2 || digit2[i][1] == 4 || digit2[i][1] == 10) {
    digitalWrite(digit2[i][0], LOW);
```

```
  }
 }
 //Write b
 for (int i = 0; i < common_size; i++) {
  if (digit1[i][1] == 9 || digit1[i][1] == 1 || digit1[i][1] == 10 || digit1[i][1] == 4 || digit1[i][1] == 2) {
   digitalWrite(digit1[i][0], LOW);
  }
 }
 delay(1000);

 for (int i = 0; i < common_size; i++) {
  digitalWrite(digit1[i][0], HIGH);
 }
 for (int i = 0; i < common_size; i++) {
  digitalWrite(digit2[i][0], HIGH);
 }
 for (int i = 0; i < common_size; i++) {
  digitalWrite(digit3[i][0], HIGH);
 }
 delay(1000);
}
```

Execution:

https://goo.gl/kM7tKp

2. Display "Hi You did good job" from the right to shift in.

Code:

```
//For each digit, pin 3 controls 1st segment, 4 controls 2nd, and so on
int digit1[][2] = {{3,1},{4,2},{5,4},{6,10},{7,9},{8,7},{9,6}};

int digit2[][2] = {{30,1},{31,2},{32,4},{33,10},{34,9},{35,7},{36,6}};
```

```
int digit3[][2] = {{37,1},{38,2},{39,4},{40,10},{41,9},{42,7},{43,6}};

int digit4[][2] = {{44,1},{45,2},{46,4},{47,10},{48,9},{49,7},{50,6}};

//common size of 4 digit (2 dimensional) arrays, return 7
int common_size = sizeof(digit1)/sizeof(digit1[0]);

void setup() {
  for(int i=0; i<common_size; i++){
    //assign output pins and turn off all digits
    pinMode(digit1[i][0], OUTPUT);
    digitalWrite(digit1[i][0], HIGH);

    pinMode(digit2[i][0], OUTPUT);
    digitalWrite(digit2[i][0], HIGH);

    pinMode(digit3[i][0], OUTPUT);
    digitalWrite(digit3[i][0], HIGH);

    pinMode(digit4[i][0], OUTPUT);
    digitalWrite(digit4[i][0], HIGH);
  }
  Serial.begin(9600);
}

void loop() {
    /* Write Hi Y */
    //Write H
```

```
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==9 || digit4[i][1]==1 || digit4[i][1]==10 || digit4[i][1]==6 || digit4[i][1]==4){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write i
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==4){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write Y
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==10 || digit1[i][1]==9 || digit1[i][1]==6 || digit1[i][1]==4 || digit1[i][1]==2){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);
```

```
/* Write i Yo */
//Write i
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==4){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write Y
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==10 || digit2[i][1]==9 || digit2[i][1]==6 || digit2[i][1]==4 || digit2[i][1]==2){
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write o
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==1 || digit1[i][1]==2 || digit1[i][1]==4 || digit1[i][1]==10){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
```

```
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write You */
//Write Y
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==10 || digit3[i][1]==9 || digit3[i][1]==6 || digit3[i][1]==4 || digit3[i][1]==2){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write o
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==1 || digit2[i][1]==2 || digit2[i][1]==4 || digit2[i][1]==10){
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write u
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==1 || digit1[i][1]==2 || digit1[i][1]==4){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
```

```
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
delay(1000);

/* Shift You */
//Write Y
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==10 || digit4[i][1]==9 || digit4[i][1]==6 || digit4[i][1]==4 || digit4[i][1]==2){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write o
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==1 || digit3[i][1]==2 || digit3[i][1]==4 || digit3[i][1]==10){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write u
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==1 || digit2[i][1]==2 || digit2[i][1]==4){
    digitalWrite(digit2[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
```

```
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write ou d */
//Write o
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==1 || digit4[i][1]==2 || digit4[i][1]==4 || digit4[i][1]==10){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write u
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==1 || digit3[i][1]==2 || digit3[i][1]==4){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write d
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==6 || digit1[i][1]==4 || digit1[i][1]==10 || digit1[i][1]==1 || digit1[i][1]==2){
    digitalWrite(digit1[i][0], LOW);
  }
}
```

```
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write u di */
//Write u
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==1 || digit4[i][1]==2 || digit4[i][1]==4){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write d
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==6 || digit2[i][1]==4 || digit2[i][1]==10 || digit2[i][1]==1 || digit2[i][1]==2){
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write i
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==4){
```

```
   digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write  did */
//Write d
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==6 || digit3[i][1]==4 || digit3[i][1]==10 || digit3[i][1]==1 || digit3[i][1]==2){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write i
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==4){
    digitalWrite(digit2[i][0], LOW);
  }
}
```

```
//Write d
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==6 || digit1[i][1]==4 || digit1[i][1]==10 || digit1[i][1]==1 || digit1[i][1]==2){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
delay(1000);

/* Shift did */
//Write d
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==6 || digit4[i][1]==4 || digit4[i][1]==10 || digit4[i][1]==1 || digit4[i][1]==2){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write i
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==4){
```

```
   digitalWrite(digit3[i][0], LOW);
  }
}
//Write d
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==6 || digit2[i][1]==4 || digit2[i][1]==10 || digit2[i][1]==1 || digit2[i][1]==2){
    digitalWrite(digit2[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write id g */
//Write i
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==4){
    digitalWrite(digit4[i][0], LOW);
  }
}
```

```
  //Write d
  for(int i=0; i<common_size; i++){
   if(digit3[i][1]==6 || digit3[i][1]==4 || digit3[i][1]==10 || digit3[i][1]==1 || digit3[i][1]==2){
     digitalWrite(digit3[i][0], LOW);
   }
  }
  //Write g
  for(int i=0; i<common_size; i++){
   if(digit1[i][1]==7 || digit1[i][1]==9 || digit1[i][1]==10 || digit1[i][1]==6 || digit1[i][1]==4 ||
digit1[i][1]==2){
     digitalWrite(digit1[i][0], LOW);
   }
  }
  delay(1000);

  for(int i=0; i<common_size; i++){
   digitalWrite(digit1[i][0], HIGH);
  }
  for(int i=0; i<common_size; i++){
   digitalWrite(digit3[i][0], HIGH);
  }
  for(int i=0; i<common_size; i++){
   digitalWrite(digit4[i][0], HIGH);
  }
  delay(1000);

  /* Write d go */
  //Write d
  for(int i=0; i<common_size; i++){
```

```
  if(digit4[i][1]==6 || digit4[i][1]==4 || digit4[i][1]==10 || digit4[i][1]==1 || digit4[i][1]==2){
    digitalWrite(digit4[i][0], LOW);
  }
 }
 //Write g
 for(int i=0; i<common_size; i++){
  if(digit2[i][1]==7 || digit2[i][1]==9 || digit2[i][1]==10 || digit2[i][1]==6 || digit2[i][1]==4 ||
digit2[i][1]==2){
    digitalWrite(digit2[i][0], LOW);
  }
 }
 //Write o
 for(int i=0; i<common_size; i++){
  if(digit1[i][1]==1 || digit1[i][1]==2 || digit1[i][1]==4 || digit1[i][1]==10){
    digitalWrite(digit1[i][0], LOW);
  }
 }
 delay(1000);

 for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
 }
 for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
 }
 for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
 }
 delay(1000);
```

```
  /* Write  goo */
  //Write g
  for(int i=0; i<common_size; i++){
   if(digit3[i][1]==7 || digit3[i][1]==9 || digit3[i][1]==10 || digit3[i][1]==6 || digit3[i][1]==4 ||
digit3[i][1]==2){
     digitalWrite(digit3[i][0], LOW);
   }
  }
  //Write o
  for(int i=0; i<common_size; i++){
   if(digit2[i][1]==1 || digit2[i][1]==2 || digit2[i][1]==4 || digit2[i][1]==10){
     digitalWrite(digit2[i][0], LOW);
   }
  }
  //Write o
  for(int i=0; i<common_size; i++){
   if(digit1[i][1]==1 || digit1[i][1]==2 || digit1[i][1]==4 || digit1[i][1]==10){
     digitalWrite(digit1[i][0], LOW);
   }
  }
  delay(1000);

  for(int i=0; i<common_size; i++){
   digitalWrite(digit1[i][0], HIGH);
  }
  for(int i=0; i<common_size; i++){
   digitalWrite(digit2[i][0], HIGH);
  }
```

```
  for(int i=0; i<common_size; i++){
    digitalWrite(digit3[i][0], HIGH);
  }
  delay(1000);

  /* Write good */
  //Write g
  for(int i=0; i<common_size; i++){
    if(digit4[i][1]==7 || digit4[i][1]==9 || digit4[i][1]==10 || digit4[i][1]==6 || digit4[i][1]==4 ||
digit4[i][1]==2){
      digitalWrite(digit4[i][0], LOW);
    }
  }
  //Write o
  for(int i=0; i<common_size; i++){
    if(digit3[i][1]==1 || digit3[i][1]==2 || digit3[i][1]==4 || digit3[i][1]==10){
      digitalWrite(digit3[i][0], LOW);
    }
  }
  //Write o
  for(int i=0; i<common_size; i++){
    if(digit2[i][1]==1 || digit2[i][1]==2 || digit2[i][1]==4 || digit2[i][1]==10){
      digitalWrite(digit2[i][0], LOW);
    }
  }
  //Write d
  for(int i=0; i<common_size; i++){
    if(digit1[i][1]==6 || digit1[i][1]==4 || digit1[i][1]==10 || digit1[i][1]==1 || digit1[i][1]==2){
      digitalWrite(digit1[i][0], LOW);
```

```
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write ood */
//Write o
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==1 || digit4[i][1]==2 || digit4[i][1]==4 || digit4[i][1]==10){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write o
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==1 || digit3[i][1]==2 || digit3[i][1]==4 || digit3[i][1]==10){
    digitalWrite(digit3[i][0], LOW);
```

```
  }
}
//Write d
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==6 || digit2[i][1]==4 || digit2[i][1]==10 || digit2[i][1]==1 || digit2[i][1]==2){
    digitalWrite(digit2[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write od J */
//Write o
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==1 || digit4[i][1]==2 || digit4[i][1]==4 || digit4[i][1]==10){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write d
```

```
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==6 || digit3[i][1]==4 || digit3[i][1]==10 || digit3[i][1]==1 || digit3[i][1]==2){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write J
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==6 || digit1[i][1]==4 || digit1[i][1]==2){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write d Jo */
//Write d
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==6 || digit4[i][1]==4 || digit4[i][1]==10 || digit4[i][1]==1 || digit4[i][1]==2){
    digitalWrite(digit4[i][0], LOW);
```

```
  }
}
//Write J
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==6 || digit2[i][1]==4 || digit2[i][1]==2){
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write o
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==1 || digit1[i][1]==2 || digit1[i][1]==4 || digit1[i][1]==10){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write  Job */
//Write J
```

```
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==6 || digit3[i][1]==4 || digit3[i][1]==2){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write o
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==1 || digit2[i][1]==2 || digit2[i][1]==4 || digit2[i][1]==10){
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write b
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==9 || digit1[i][1]==1 || digit1[i][1]==10 || digit1[i][1]==4 || digit1[i][1]==2){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
delay(1000);
```

```
/* Write  ob H */
//Write o
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==1 || digit4[i][1]==2 || digit4[i][1]==4 || digit4[i][1]==10){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write b
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==9 || digit3[i][1]==1 || digit3[i][1]==10 || digit3[i][1]==4 || digit3[i][1]==2){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write H
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==9 || digit1[i][1]==1 || digit1[i][1]==10 || digit1[i][1]==6 || digit1[i][1]==4){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
```

```
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write  b Hi */
//Write b
for(int i=0; i<common_size; i++){
  if(digit4[i][1]==9 || digit4[i][1]==1 || digit4[i][1]==10 || digit4[i][1]==4 || digit4[i][1]==2){
    digitalWrite(digit4[i][0], LOW);
  }
}
//Write H
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==9 || digit2[i][1]==1 || digit2[i][1]==10 || digit2[i][1]==6 || digit2[i][1]==4){
    digitalWrite(digit2[i][0], LOW);
  }
}
//Write i
for(int i=0; i<common_size; i++){
  if(digit1[i][1]==4){
    digitalWrite(digit1[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit1[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
```

```
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit4[i][0], HIGH);
}
delay(1000);

/* Write  Hi */
//Write H
for(int i=0; i<common_size; i++){
  if(digit3[i][1]==9 || digit3[i][1]==1 || digit3[i][1]==10 || digit3[i][1]==6 || digit3[i][1]==4){
    digitalWrite(digit3[i][0], LOW);
  }
}
//Write i
for(int i=0; i<common_size; i++){
  if(digit2[i][1]==4){
    digitalWrite(digit2[i][0], LOW);
  }
}
delay(1000);

for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
}
for(int i=0; i<common_size; i++){
  digitalWrite(digit3[i][0], HIGH);
}
delay(1000);
```

}

Execution:

https://goo.gl/X2H2rc

3. Display from 0000 to 9999 after certain time delay to increase one, such as "0000 -> 0001-> 0002-> ... ...->9999" on four 7-segment LEDs.

Code:

```
//For each digit, pin 3 controls 1st segment, 4 controls 2nd, and so on
int digit1[][2] = {{3, 1}, {4, 2}, {5, 4}, {6, 10}, {7, 9}, {8, 7}, {9, 6}};

int digit2[][2] = {{30, 1}, {31, 2}, {32, 4}, {33, 10}, {34, 9}, {35, 7}, {36, 6}};

int digit3[][2] = {{37, 1}, {38, 2}, {39, 4}, {40, 10}, {41, 9}, {42, 7}, {43, 6}};

int digit4[][2] = {{44, 1}, {45, 2}, {46, 4}, {47, 10}, {48, 9}, {49, 7}, {50, 6}};

//common size of 4 digit (2 dimensional) arrays, return 7
int common_size = sizeof(digit1) / sizeof(digit1[0]);

int pin=0, led=0;

void setup() {
  for (int i = 0; i < common_size; i++) {
    //assign output pins
    pinMode(digit1[i][0], OUTPUT);
    pinMode(digit2[i][0], OUTPUT);
    pinMode(digit3[i][0], OUTPUT);
    pinMode(digit4[i][0], OUTPUT);
    //Write 0 for all digits
    if(digit1[i][1]==10 || digit2[i][1]==10 || digit3[i][1]==10 || digit4[i][1]==10){
```

```
    digitalWrite(digit1[i][0], HIGH);
    digitalWrite(digit2[i][0], HIGH);
    digitalWrite(digit3[i][0], HIGH);
    digitalWrite(digit4[i][0], HIGH);
   }
  }
  writeNumbers(pin, led, 0);
  Serial.begin(9600);
}

void loop() {
  //Start increasing digit4
  for(int n=0; n<10; n++){

   for(int i=0; i<common_size; i++){
    pin = digit4[i][0];
    led = digit4[i][1];
    writeNumbers(pin, led, n);
   }

   //Start increasing digit3
   for(int n=0; n<10; n++){

    for(int i=0; i<common_size; i++){
     pin = digit3[i][0];
     led = digit3[i][1];
     writeNumbers(pin, led, n);
    }
```

```
//Start increasing digit2
for(int n=0; n<10; n++){

 for(int i=0; i<common_size; i++){
  pin = digit2[i][0];
  led = digit2[i][1];
  writeNumbers(pin, led, n);
 }

 //Start increasing digit1
 for(int n=0; n<10; n++){

  for(int i=0; i<common_size; i++){
   pin = digit1[i][0];
   led = digit1[i][1];
   writeNumbers(pin, led, n);
  }
  delay(10);

  for(int i=0; i<common_size; i++){
   digitalWrite(digit1[i][0], HIGH);
  }
  delay(10);

 }//End increasing digit1

 for(int i=0; i<common_size; i++){
  digitalWrite(digit2[i][0], HIGH);
 }
```

```
    }//End increasing digit2

    for(int i=0; i<common_size; i++){
      digitalWrite(digit3[i][0], HIGH);
    }

   }//End increasing digit3

   for(int i=0; i<common_size; i++){
    digitalWrite(digit4[i][0], HIGH);
   }

  }//End increasing digit4

}

void writeNumbers(int pin, int led, int num){
  switch(num){
   case 0:
    //Write 0
    if(led==6 || led==7 || led==9 || led==1 || led==2 || led==4){
      digitalWrite(pin, LOW);
    }
    break;
   case 1:
    //Write 1
    if(led==6 || led==4){
      digitalWrite(pin, LOW);
```

```
  }
  break;
case 2:
  //Write 2
  if(led==7 || led==6 || led==10 || led==1 || led==2){
    digitalWrite(pin, LOW);
  }
  break;
case 3:
  //Write 3
  if(led==7 || led==6 || led==10 || led==4 || led==2){
    digitalWrite(pin, LOW);
  }
  break;
case 4:
  //Write 4
  if(led==9 || led==10 || led==6 || led==4){
    digitalWrite(pin, LOW);
  }
  break;
case 5:
  //Write 5
  if(led==7 || led==9 || led==10 || led==4 || led==2){
    digitalWrite(pin, LOW);
  }
  break;
case 6:
  //Write 6
  if(led!=6){
```

```
      digitalWrite(pin, LOW);
    }
    break;
  case 7:
    //Write 7
    if(led==7 || led==6 || led==4){
      digitalWrite(pin, LOW);
    }
    break;
  case 8:
    //Write 8
    digitalWrite(pin, LOW);
    break;
  case 9:
    //Write 9
    if(led!=1){
      digitalWrite(pin, LOW);
    }
    break;
 }
}
```

Execution:

https://goo.gl/tUWeuJ