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Due 05-04 @12:00 am
Quiz Two

Problem 1)

a)

```
void IICWriteClockLine(int value){
  if(value == 0){
    digitalWrite(6,LOW);
  }
  else if(value == 1){
    digitalWrite(6,HIGH);
  }
}
```

b)

```
void IICWriteDataLine(int value){
  if(value == 0){
    digitalWrite(7,LOW);
  }
  else if(value == 1){
    digitalWrite(7,HIGH);
  }
}
```

c)

```
void IICReadDataLine(void){
  if(digitalRead(7) == LOW){
    return(0);
  }
  else if(digitalRead(7) == HIGH){
    return(1);
  }
}
```

d)

```
void TimerTransitHighToLow(void)
{
  ISR(TIMER2_OVF_vect);
  IICWriteCLockLine(0); //set clock to low
}
```

e)

```
void TimerTransitLowToHigh(void){
  ISR(TIMER2_OVF_vect);
  IICWriteCLockLine(0); //set clock to low
}
```

f)

```
#include <Wire.h>
int HailIIC(unsigned char address){
  while(True){
    bool startTransmission = false;
    if(digitalRead(6) == LOW){ //if scl was switched to low already
      TimerTransitLowToHigh(); //switch back to high
    }
    else: //scl is at high value
      if(IICReadDataLine() == 0){
        //sda is already at low
        IICWriteDataLine(1); //switch to high
      else: //scl = high, sda = high
        startTransmission = true;
      }
    if(startTransmission == true){
      //write request to slave I2C address
      wire.beginTransmission(address);
      if(wire.requestFrom(address, 1) == 1){
        return 1; //for ack
      }
      else: return 0; //for nack
    }
```

Problem 2)

Notes: GetInfo() will return 0 for swipe y, 1 for swipe x, 2 for tap and hold, and 3 for single tap. Also, assume that the wire.h library is also included

```
int GetInfo(){
  // 0 = y-/y+, 1 = x-/x+, 2 = press and hold 3 = single tap
  unsigned char address = 0x000D;
  if(HailIIC(address) == 1){ //receives ack, ready to go
    while(true){
        wire.requestFrom(address, 8); //request 8 bits from trackpad
        index = 7;
        while(wire.available()){
          if(index == 7){ wire.read();}
          else if(index == 6){ wire.read();}
          else if(index == 5){ // y-
            if (wire.read() == 1){ return 0;}
          }
          else if(index == 4){ //y+
            if (wire.read() == 1){ return 0;}
          }
          else if(index == 3){ //x+
            if (wire.read() == 1){ return 1;}
          }
          else if(index == 2){ //x-
            if (wire.read() == 1){ return 1;}
          }
          else if(index == 1){ //press and hold
            if (wire.read() == 1){ return 2;}
          }
          else if(index == 0){ //single tap
            if (wire.read() == 1){ return 3;}
          }
        index -= 1;
        }
    }
  }
}
```

Problem 3)

```
#define RDY = 1; //Setup RDY pin
pinMode(RDY, INPUT); //
void loop(){
 while(RDY == HIGH){
   GetInfo();
 }
}
```

- **A potential hazard could the RDY input not being updated correctly and as a result, not retrieving necessary information.**
- **A loop function would be required because you would have to continually check to see whether or not RDY is in a High or Low state.**