CODING AND SOLUTIONING

Date	19.11.2022
Team ID	PNT2022TMID50079
Project Name	IOT Based safety gadget for child safety monitoring and notification

Location tracking:

```
#include <LiquidCrystal.h>
#include <Servo.h>

void UpDown();
void LeftRight();
Servo servo1;
Servo servo2;
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
void setup() {

  lcd.begin(16,2);
  lcd.print("servo1 ");
  lcd.setCursor(0,1);
  lcd.print("servo2 ");
  servo1.attach(9);
  servo2.attach(10);

  servo1.write(90);
  servo2.write(90);
}

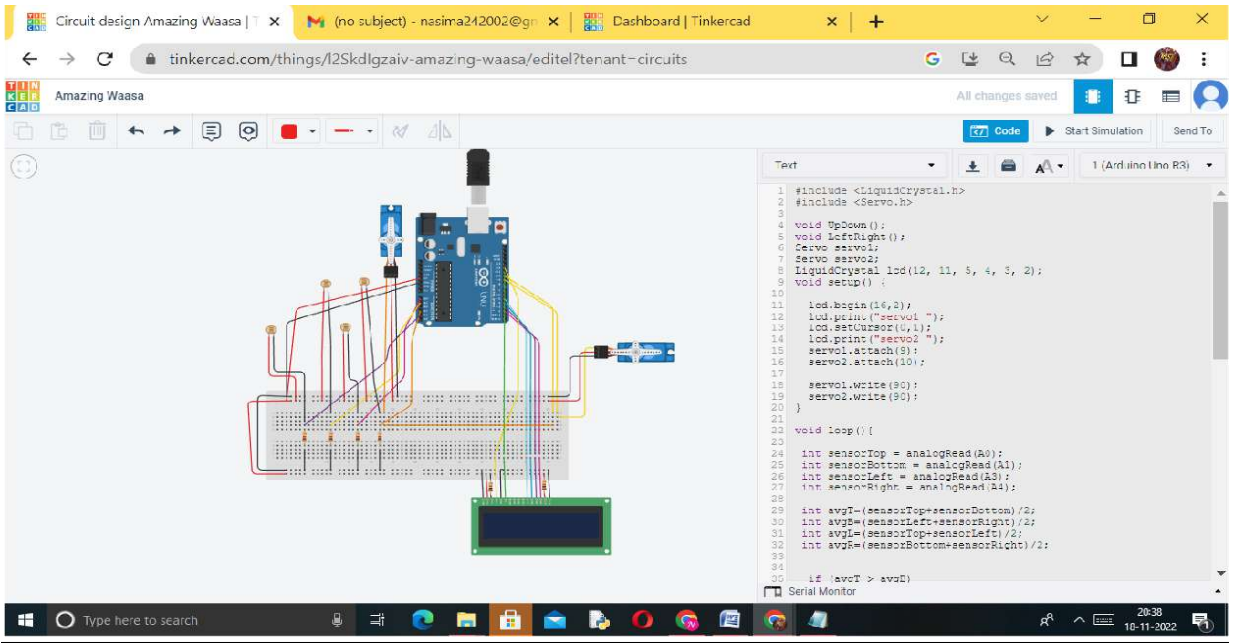
void loop(){

 int sensorTop = analogRead(A0);
 int sensorBottom = analogRead(A1);
 int sensorLeft = analogRead(A3);
 int sensorRight = analogRead(A4);

 int avgT=(sensorTop+sensorBottom)/2;
 int avgB=(sensorLeft+sensorRight)/2;
 int avgL=(sensorTop+sensorLeft)/2;
 int avgR=(sensorBottom+sensorRight)/2;


  if (avgT > avgB)
  {
          UpDown(sensorTop, sensorBottom);
  }
  if(avgT < avgB)
  {
    UpDown(sensorTop, sensorBottom);
  }
  if(avgL > avgR)
         {
          LeftRight(sensorLeft, sensorRight);
    }
  if(avgL < avgR)
         {
          LeftRight(sensorLeft, sensorRight);
    }
 delay(10);
}
void UpDown(int avgT, int avgB){
  int pos1= servo1.read();

  if(avgT < avgB){
     pos1 = --pos1;
    }
          else
     {
      pos1 = ++pos1;
     }
  servo1.write(pos1);
   lcd.setCursor(12,0);
 lcd.print(pos1);
 }
void LeftRight(int avgL, int avgR){
  int pos2= servo2.read();
  if(avgL < avgR)
   {
    pos2 = --pos2;
   }
         else
    {
     pos2 = pos2 + 1;
    }
  servo2.write(pos2);
  lcd.setCursor(12,1);
 lcd.print(pos2);
}
```



Circuit design Amazing Waasa | T
(no subject) - nasima242002@gm
Dashboard | Tinkercad
tinkercad.com/things/l2Skdlgzaiv-amazing-waasa/editel?tenant=circuits
Amazing Waasa
All changes saved

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  if (avgT > avgB)
```

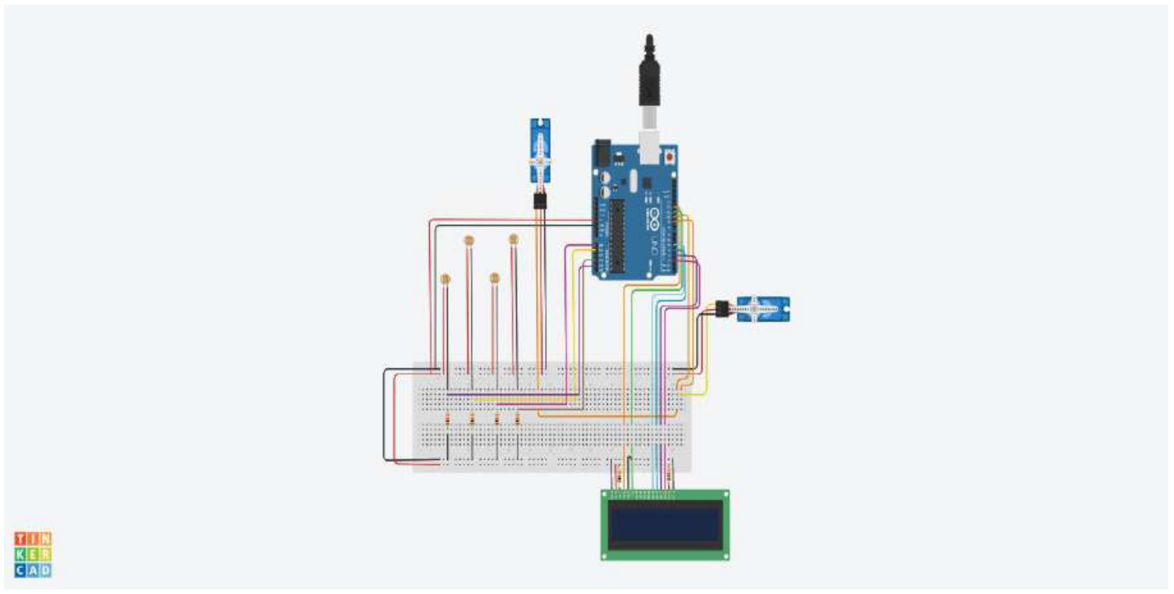


Diagram.json:

```
{
  "version":  1,
  "author": "Uri Shaked",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-arduino-mega", "id": "mega", "top": -1.43, "left": -48.12,
"attrs": {} },
    { "type": "chip-gps-fake", "id": "chip1", "top": -75.78, "left": 196.8,
"attrs": {} }
  ],
  "connections": [
    [ "chip1:GND", "mega:GND.2", "black", [ "v0", "h49.81", "v259.2", "h-124.8" ]
],
    [ "chip1:VCC", "mega:5V", "red", [ "h59.41", "v278.4", "h-134.4" ] ],
    [ "mega:19", "chip1:TX", "yellow", [ "v-45.97", "h-78.38", "v-19.2" ] ],
    [ "mega:18", "chip1:RX", "orange", [ "v-36.37", "h-77.98", "v-38.4" ] ]
  ]
}
```

GPS-FAKECHIP.H:

```
#include<stdio.h>
#include<stdlib.h>

#include"wokwi-api.h"

DEFINE_PIN(RX);
DEFINE_PIN(TX);
DEFINE_PIN(VCC);
DEFINE_PIN(GND);

#defineLEN(arr) ((int)(sizeof(arr) / sizeof(arr)[0]))
#define SECOND 1000000/* micros */
```

```
constchargps_tx_data[][80] = { // GPRMC & GPGGA (Hypothetical Data)
"$GPGGA,172914.049,2327.985,S,05150.410,W,1,12,1.0,0.0,M,0.0,M,,*60\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172914.049,A,2327.985,S,05150.410,W,009.7,025.9,060622,000.0,W*74\r\n",
          "$GPGGA,172915.049,2327.982,S,05150.409,W,1,12,1.0,0.0,M,0.0,M,,*6E\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172915.049,A,2327.982,S,05150.409,W,009.7,025.9,060622,000.0,W*7A\r\n",
          "$GPGGA,172916.049,2327.980,S,05150.408,W,1,12,1.0,0.0,M,0.0,M,,*6E\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172916.049,A,2327.980,S,05150.408,W,009.7,025.9,060622,000.0,W*7A\r\n",
          "$GPGGA,172917.049,2327.977,S,05150.406,W,1,12,1.0,0.0,M,0.0,M,,*69\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172917.049,A,2327.977,S,05150.406,W,009.7,025.9,060622,000.0,W*7D\r\n",
          "$GPGGA,172918.049,2327.975,S,05150.405,W,1,12,1.0,0.0,M,0.0,M,,*67\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172918.049,A,2327.975,S,05150.405,W,009.7,025.9,060622,000.0,W*73\r\n",
          "$GPGGA,172919.049,2327.973,S,05150.404,W,1,12,1.0,0.0,M,0.0,M,,*61\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172919.049,A,2327.973,S,05150.404,W,009.7,025.9,060622,000.0,W*75\r\n",
          "$GPGGA,172920.049,2327.970,S,05150.403,W,1,12,1.0,0.0,M,0.0,M,,*6F\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172920.049,A,2327.970,S,05150.403,W,009.7,025.9,060622,000.0,W*7B\r\n",
          "$GPGGA,172921.049,2327.968,S,05150.402,W,1,12,1.0,0.0,M,0.0,M,,*66\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172921.049,A,2327.968,S,05150.402,W,009.7,025.9,060622,000.0,W*72\r\n",
          "$GPGGA,172922.049,2327.965,S,05150.401,W,1,12,1.0,0.0,M,0.0,M,,*6B\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172922.049,A,2327.965,S,05150.401,W,009.7,025.9,060622,000.0,W*7F\r\n",
          "$GPGGA,172923.049,2327.963,S,05150.399,W,1,12,1.0,0.0,M,0.0,M,,*6A\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172923.049,A,2327.963,S,05150.399,W,009.7,025.9,060622,000.0,W*7E\r\n",
          "$GPGGA,172924.049,2327.960,S,05150.398,W,1,12,1.0,0.0,M,0.0,M,,*6F\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172924.049,A,2327.960,S,05150.398,W,009.7,294.1,060622,000.0,W*7B\r\n",
          "$GPGGA,172925.049,2327.959,S,05150.401,W,1,12,1.0,0.0,M,0.0,M,,*63\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172925.049,A,2327.959,S,05150.401,W,009.7,294.1,060622,000.0,W*77\r\n",
          "$GPGGA,172926.049,2327.958,S,05150.403,W,1,12,1.0,0.0,M,0.0,M,,*63\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172926.049,A,2327.958,S,05150.403,W,009.7,294.1,060622,000.0,W*77\r\n",
          "$GPGGA,172927.049,2327.957,S,05150.406,W,1,12,1.0,0.0,M,0.0,M,,*68\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
          "$GPRMC,172927.049,A,2327.957,S,05150.406,W,009.7,205.5,060622,000.0,W*70\r\n",
          "$GPGGA,172928.049,2327.959,S,05150.407,W,1,12,1.0,0.0,M,0.0,M,,*68\r\n",
          "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172928.049,A,2327.959,S,05150.407,W,009.7,205.5,060622,000.0,W*70\r\n",
  "$GPGGA,172929.049,2327.962,S,05150.408,W,1,12,1.0,0.0,M,0.0,M,,*6E\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172929.049,A,2327.962,S,05150.408,W,009.7,205.5,060622,000.0,W*76\r\n",
  "$GPGGA,172930.049,2327.964,S,05150.410,W,1,12,1.0,0.0,M,0.0,M,,*69\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172930.049,A,2327.964,S,05150.410,W,009.7,205.5,060622,000.0,W*71\r\n",
  "$GPGGA,172931.049,2327.967,S,05150.411,W,1,12,1.0,0.0,M,0.0,M,,*6A\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172931.049,A,2327.967,S,05150.411,W,009.7,205.5,060622,000.0,W*72\r\n",
  "$GPGGA,172932.049,2327.969,S,05150.412,W,1,12,1.0,0.0,M,0.0,M,,*64\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172932.049,A,2327.969,S,05150.412,W,009.7,205.5,060622,000.0,W*7C\r\n",
  "$GPGGA,172933.049,2327.971,S,05150.413,W,1,12,1.0,0.0,M,0.0,M,,*6D\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172933.049,A,2327.971,S,05150.413,W,009.7,205.5,060622,000.0,W*75\r\n",
  "$GPGGA,172934.049,2327.974,S,05150.414,W,1,12,1.0,0.0,M,0.0,M,,*68\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172934.049,A,2327.974,S,05150.414,W,009.7,205.5,060622,000.0,W*70\r\n",
  "$GPGGA,172935.049,2327.976,S,05150.415,W,1,12,1.0,0.0,M,0.0,M,,*6A\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172935.049,A,2327.976,S,05150.415,W,009.7,205.5,060622,000.0,W*72\r\n",
  "$GPGGA,172936.049,2327.979,S,05150.417,W,1,12,1.0,0.0,M,0.0,M,,*64\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172936.049,A,2327.979,S,05150.417,W,009.7,205.5,060622,000.0,W*7C\r\n",
  "$GPGGA,172937.049,2327.981,S,05150.418,W,1,12,1.0,0.0,M,0.0,M,,*6D\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172937.049,A,2327.981,S,05150.418,W,009.7,117.1,060622,000.0,W*71\r\n",
  "$GPGGA,172938.049,2327.983,S,05150.415,W,1,12,1.0,0.0,M,0.0,M,,*6D\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172938.049,A,2327.983,S,05150.415,W,009.7,117.1,060622,000.0,W*71\r\n",
  "$GPGGA,172939.049,2327.984,S,05150.413,W,1,12,1.0,0.0,M,0.0,M,,*6D\r\n",
  "$GPGSA,A,3,01,02,03,04,05,06,07,08,09,10,11,12,1.0,1.0,1.0*30\r\n",
  "$GPRMC,172939.049,A,2327.984,S,05150.413,W,009.7,117.1,060622,000.0,W*71\r\n",
};

typedefstruct {
  uart_dev_t uart0;
  uint32_t gps_tx_index;
  uint32_t tx_timer;
} chip_state_t;

staticvoidon_uart_rx_data(void *ctx, uint8_t byte);
staticvoidon_uart_write_done(void *ctx);
```

```
voidEXPORT(chip_timer_event)(chip_state_t *chip, uint32_t timer_id) {
  if (timer_id == chip->tx_timer) {
    constchar *message = gps_tx_data[chip->gps_tx_index++];
    uart_write(chip->uart0, message, strlen(message));
    if (chip->gps_tx_index>= LEN(gps_tx_data)) {
      chip->gps_tx_index = 0;
    }
  }
}

void* chip_init(void) {
  setvbuf(stdout, NULL, _IOLBF, 1024);

  chip_state_t *chip = malloc(sizeof(chip_state_t));
  chip->gps_tx_index = 0;

  chip->tx_timer = timer_init();
  timer_start(chip->tx_timer, SECOND, true);

  constuart_config_tuart_config = {
    .tx = pin_init("TX", INPUT_PULLUP),
    .rx = pin_init("RX", INPUT),
    .baud_rate = 4800,
  };

  chip->uart0 = uart_init(chip, &uart_config);
  return chip;
}
```

GPS_FAKE_CHIP.JSON:

```
{
  "name": "GPS Fake",
  "author": "Anderson Costa",
  "pins": [
    "RX",
    "TX",
    "GND",
    "VCC"
  ]
}
```

NMEA.H:

```
#ifdefNMEA_h
#defineNMEA_h
```

```
#include"Arduino.h"
 #define  GPRMC        1
 #define  MTR          1.0
 #define  KM           0.001
 #define  MI           0.00062137112
 #define  NM           0.00053995680
 #define  PARSEC       0.000000000000
 #define  MPS          0.51444444
 #define  KMPH         1.852
 #define  KTS          1.0
#defineLIGHTSPEED  0.000000001716
class NMEA
{
  public:
    NMEA(int connect);
    intdecode(char c);
    floatgprmc_utc();
    chargprmc_status();
    floatgprmc_latitude();
    floatgprmc_longitude();
    floatgprmc_speed(float unit
    floatgprmc_course();
    floatgprmc_distance_to(float latitude, float longitude, float unit;
    floatgprmc_course_to(float latitude, float longitude);
    char* sentence();
    intterms();
    char* term(int t);
    floatterm_decimal(int t);
    intlibversion();
  private:
    int _gprmc_only;
    float _gprmc_utc;
    char _gprmc_status;
    float _gprmc_lat;
    float _gprmc_long;
    float _gprmc_speed;
    float _gprmc_angle;
    char  f_sentence[100];
    char* f_term[30];
    intf_terms;
    int _terms;
    char _sentence[100];
    char* _term[30];
    int n;
    int _gprmc_tag;
    int _state;
    int _parity;
    int _nt;
    float _degs;

    floatdistance_between(float lat1, float long1, float lat2, float long2, 
floatunits_per_meter);
    floatinitial_course(float lat1, float long1, float lat2, float long2);
    int _dehex(char a);
    float _decimal(char* s);
};
#endif
```

NMEA.CPP:

```
#include"Arduino.h"
#include"NMEA.h"

#define _GPRMC_TERM   "$GPRMC,"
#define _GNRMC_TERM   "$GNRMC,"
#define _LIB_VERSION 1
NMEA::NMEA(int connect)
{
  _gprmc_only = connect;
  _gprmc_utc = 0.0;
  _gprmc_status = 'V';
  _gprmc_lat = 0.0;
  _gprmc_long = 0.0;
  _gprmc_speed = 0.0;
  _gprmc_angle = 0.0;
  _terms = 0;
  n = 0;
  _state = 0;
  _parity = 0;
  _nt = 0;

  f_sentence[0] = 0;
  f_terms = 0;
  for (int t = 0; t <30; t++) {
    _term[t] = (char*) malloc (15 * sizeof(char));
    f_term[t] = (char*) malloc (15 * sizeof(char));
    (f_term[t])[0] = 0;
  }
}
```

```
intNMEA::decode(char c) {
  if ((n >= 100) || (_terms >= 30) || (_nt>= 15)) {
    _state = 0;
  }
  if ((c == 0x0A) || (c == 0x0D)) {
    _state = 0;
  }
  if (c == '$') {
    _gprmc_tag = 0;
    _parity = 0;
    _terms = 0;
    _nt = 0;
    _sentence[0] = c;
    n = 1;
    _state = 1;
    return0;
  }
  switch (_state) {
    case0;
      break;
    case1;
      if (n <7) {
        if ((c == _GNRMC_TERM[n]) || (c == _GPRMC_TERM[n])) {
          _gprmc_tag++;
        }
      }
      _sentence[n++] = c;
      switch (c) {
        case',':
          (_term[_terms++])[_nt] = 0;
          _nt = 0;
          _parity = _parity ^ c;
          break;
        case'*';
          (_term[_terms++])[_nt] = 0;
          _nt = 0;
          _state++;
          break;
        default:
          (_term[_terms])[_nt++] = c;
          _parity = _parity ^ c;
          break;
      }
      break;
```

```
case2:
  _sentence[n++] = c;
  (_term[_terms])[_nt++] = c;
  _parity = _parity - (16 * _dehex(c));
  _state++;
  break;
case3:
  _sentence[n++] = c;
  _sentence[n++] = 0;
  (_term[_terms])[_nt++] = c;
  (_term[_terms++])[_nt] = 0;
  _state = 0;
  _parity = _parity - _dehex(c);
  if (_parity == 0) {
    if ((!_gprmc_only) || (_gprmc_tag == 6)) {
      while ((--n) >= 0) {
        f_sentence[n] = _sentence[n];
      }
      for (f_terms = 0; f_terms< _terms; f_terms++) {
        _nt = 0;
        while ((_term[f_terms])[_nt]) {
          (f_term[f_terms])[_nt] = (_term[f_terms])[_nt];
          _nt++;
        }
        (f_term[f_terms])[_nt] = 0;
      }

      if (_gprmc_tag == 6){
        _gprmc_utc = _decimal(_term[1]);
        _gprmc_status = (_term[2])[0];
        _gprmc_lat = _decimal(_term[3]) / 100.0;
        _degs = floor(_gprmc_lat);
        _gprmc_lat = (100.0 * (_gprmc_lat - _degs)) / 60.0;
        _gprmc_lat += _degs;
        if ((_term[4])[0] == 'S') {
          _gprmc_lat = 0.0 - _gprmc_lat;
        }
        _gprmc_long = _decimal(_term[5]) / 100.0;
        _degs = floor(_gprmc_long);
        _gprmc_long = (100.0 * (_gprmc_long - _degs)) / 60.0;
        _gprmc_long += _deg;
        if ((_term[6])[0] == 'W') {
          _gprmc_long = 0.0 - _gprmc_long;
        }
        _gprmc_speed = _decimal(_term[7]);
```

```
            _gprmc_angle = _decimal(_term[8]);
          }

          return1;
        }
      }
      break;
    default:
      _state = 0;
      break;
  }
  return0;
}

floatNMEA::gprmc_utc(){
  return _gprmc_utc;
}

charNMEA::gprmc_status() {
  return _gprmc_status;
}

floatNMEA::gprmc_latitude() {
  return _gprmc_lat;
}

floatNMEA::gprmc_longitude() {
    return _gprmc_long;
}

floatNMEA::gprmc_speed(float unit) {
  return (_gprmc_speed * unit);
}

floatNMEA::gprmc_course() {
  return _gprmc_angle;
}

floatNMEA::gprmc_distance_to(float latitude, float longitude, float unit) {
  returndistance_between( _gprmc_lat, _gprmc_long, latitude, longitude, unit);
}

floatNMEA::gprmc_course_to(float latitude, float longitude) {
  returninitial_course( _gprmc_lat, _gprmc_long, latitude, longitude);
}
```

```
char* NMEA::sentence() {
  returnf_sentence;
}

intNMEA::terms() {
  returnf_terms;
}

char* NMEA::term(int t) {
  returnf_term[t];
}

floatNMEA::term_decimal(int t) {
  return _decimal(f_term[t]);
}

intNMEA::libversion() {
  return _LIB_VERSION;
}

floatNMEA::distance_between (float lat1, float long1, float lat2, float long2,
floatunits_per_meter)
{  float delta = radians(long1 - long2);
  floatsdlong = sin(delta);
  floatcdlong = cos(delta);

  lat1 = radians(lat1);
  lat2 = radians(lat2);

  float slat1 = sin(lat1);
  float clat1 = cos(lat1);
  float slat2 = sin(lat2);
  float clat2 = cos(lat2);

  delta = (clat1 * slat2) - (slat1 * clat2 * cdlong);
  delta = sq(delta);
  delta += sq(clat2 * sdlong);
  delta = sqrt(delta);

  floatdenom = (slat1 * slat2) + (clat1 * clat2 * cdlong);

  delta = atan2(delta, denom);

  return delta * 6372795 * units_per_meter;
}
```

```
floatNMEA::initial_course (float lat1, float long1, float lat2, float long2) {
  floatdlon = radians(long2 - long1);
  lat1 = radians(lat1);
  lat2 = radians(lat2);
  float a1 = sin(dlon) * cos(lat2);
  float a2 = sin(lat1) * cos(lat2) * cos(dlon);
  a2 = cos(lat1) * sin(lat2) - a2;
  a2 = atan2(a1, a2);
  if (a2 <0.0) {
    a2 += TWO_PI;
  }
  returndegrees(a2);
}

intNMEA::_dehex(char a) {
  if (int(a) >= 65) {
    returnint(a) - 55;
  }
  else {
    returnint(a) - 48;
  }
}

floatNMEA::_decimal(char* s) {
  long  rl = 0;
  floatrr = 0.0;
  floatrb = 0.1;
  boolean dec = false;
  inti = 0;

  if ((s[i] == '-') || (s[i] == '+')) {
    i++;
  }
  while (s[i] != 0) {
    if (s[i] == '.') {
      dec = true;
    }
    else {
      if(!dec) {
        rl = (10 * rl) + (s[i] - 48);
      }
      else {
        rr += rb * (float)(s[i] - 48);
        rb /= 10.0;
      }
    }
    i++;
  }
  rr += (float)rl;
  if (s[0] == '-') {
    rr = 0.0 - rr;
  }
  returnrr;
}
```

GPS.CHIPS.EXAMPLE.IN:

```
#include"NMEA.h"

#defineLEN(arr) ((int)(sizeof(arr) / sizeof(arr)[0]))

union {
  charbytes[4];
  float valor;
} velocidadeGPS;

float latitude;
float longitude;
NMEA gps(GPRMC);


voidsetup() {
  Serial.begin(9600);
  Serial1.begin(4800);
  Serial.println("Data received from GPS Fake:");
}

voidloop() {
  while (Serial1.available()) {
    charserialData = Serial1.read();
    Serial.print(serialData);
    if (gps.decode(serialData)) {
      if (gps.gprmc_status() == 'A') {
        velocidadeGPS.valor = gps.gprmc_speed(KMPH);
      } else {
        velocidadeGPS.valor = 0;
      }

      latitude = gps.gprmc_latitude();
      longitude = gps.gprmc_longitude();
```

```
        Serial.println(); Serial.println();
        Serial.print(" Latitude: ");
        Serial.println(latitude, 8);
        Serial.print("Longitude: ");
        Serial.println(longitude, 8);
        Serial.print("              Speed: ");
        Serial.print(velocidadeGPS.valor);Serial.println(" Km/h");
        convertCoordinatesToCartesian(latitude, longitude);
      }
    }
  }

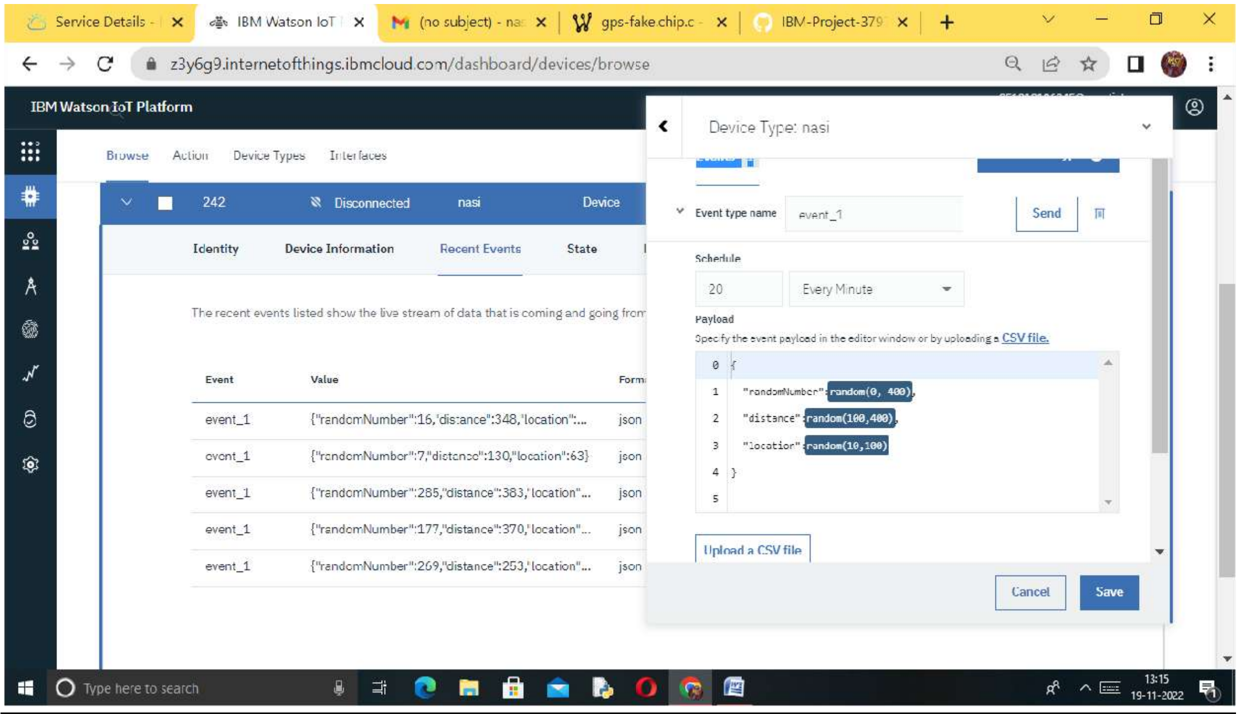
voidconvertCoordinatesToCartesian(float latitude, float longitude) {
  floatlatRadius = latitude * (PI) / 180;
  floatlonRadius = longitude * (PI) / 180;

  intearthRadius = 6371; // Radius in km

  floatposX = earthRadius * cos(latRadius) * cos(lonRadius);
  floatposY = earthRadius * cos(latRadius) * sin(lonRadius);

  Serial.print("                X: ");
  Serial.println(posX);

  Serial.print("                Y: ");
  Serial.println(posY);
}
```
LINK:https://wokwi.com/projects/348673807535309395



The recent events listed show the live stream of data that is coming and going from

Event	Value	Form
event_1	{"randomNumber":16,'distance":348,'location":...	json
event_1	{"randomNumber":7,"distance":130,"location":63}	json
event_1	{"randomNumber":285,"distance":383,'location"...	json
event_1	{"randomNumber":177,"distance":370,'location"...	json
event_1	{"randomNumber":269,"distance":253,'location"...	json

Event type name: event_1

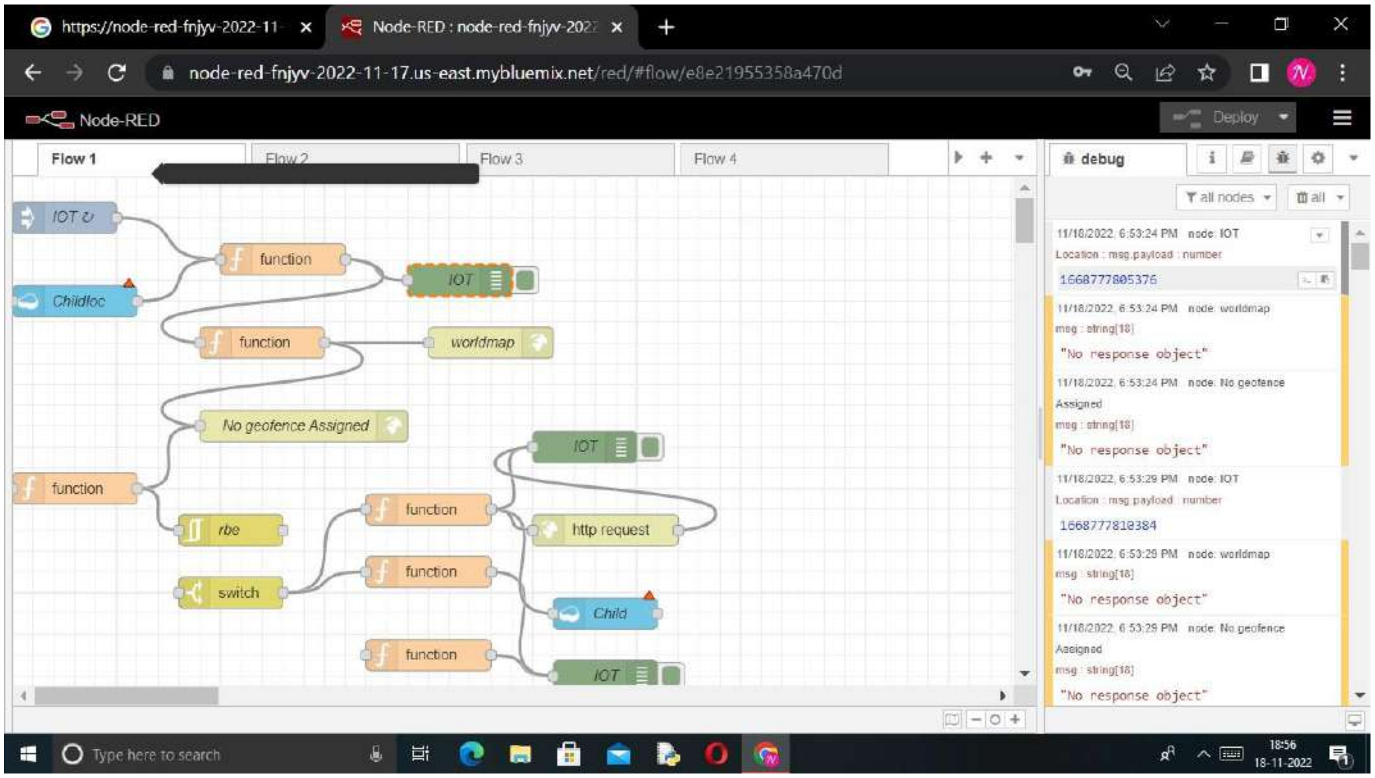
Schedule: 20 Every Minute

Payload

Specify the event payload in the editor window or by uploading a CSV file.

```
{
  "randomNumber":random(0, 400),
  "distance":random(100,400),
  "location":random(10,100)
}
```

Using node red service:



```
11/18/2022, 6:53:24 PM  node: IOT
Location : msg.payload : number
1668777805376
11/18/2022, 6:53:24 PM  node: worldmap
msg : string[18]
"No response object"
11/18/2022, 6:53:24 PM  node: No geofence
Assigned
msg : string[18]
"No response object"
11/18/2022, 6:53:29 PM  node: IOT
Location : msg.payload : number
1668777810384
11/18/2022, 6:53:29 PM  node: worldmap
msg : string[18]
"No response object"
11/18/2022, 6:53:29 PM  node: No geofence
Assigned
msg : string[18]
"No response object"
```

HOME PAGE:

```
<!DOCTYPE html>
<html>
  <head>
    <title>IOT BASED CHILD SAFETY MONITORING AND NOTIFICATION</title>
    <link rel="stylesheet"  type="text/css" href="homepage.css">
  </head>
  <body background="C:\Users\ELCOT\Documents\trackinglocation.jpg">
    <div class="wrapper">
      <nav class="navbar">
        <ul>
          <li><a href="#">Home</a></li>
          <li><a href="#">About us</a></li>
```

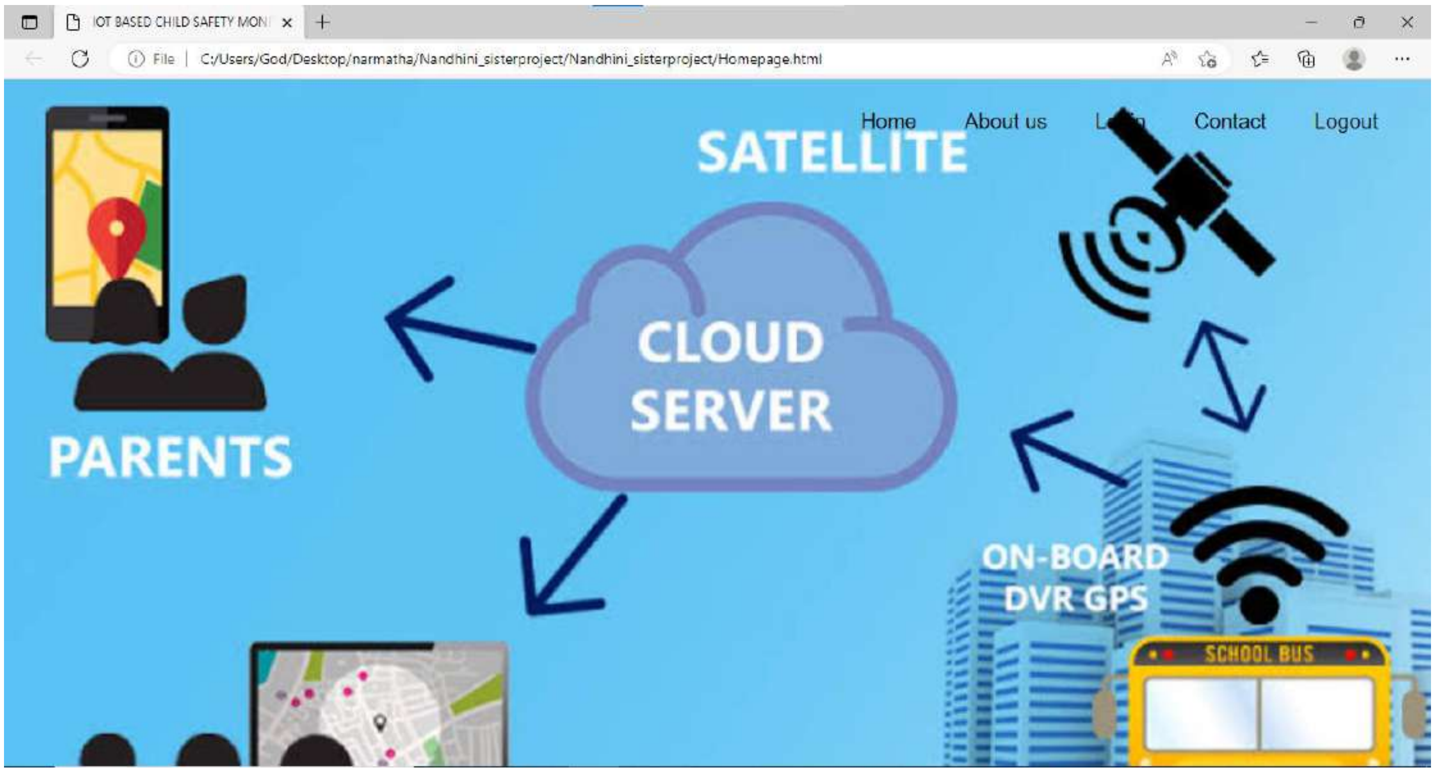
```
                    <li><a href="#">Login</a></li>
                    <li><a href="#">Contact</a></li>
                    <li><a href="#">Logout</a></li>

                </ul>
            </nav>
        </div>
    </body>
</html>
```

CSS FILE:

```
* {
    padding: 0;
    margin: 0;
}
body{
    background-repeat: no-repeat;
    background-size: 105%;
}
.wrapper{
    background-size: 10000px;
    height: 100vh;
}
.navbar{
    height: 80px;
    width: 100%;
    background: rgba(red, green, blue, alpha);
}
.navbar ul{
    float: right;
    margin-right: 30px;
    }
    .navbar ul li{
        list-style: none;
        margin: 0 8px;
        display: inline-block;
        line-height: 80px;
    }
    .navbar ul li a{
        text-decoration: none;
        color:black;
        font-size: 20px;
        padding: 6px 13px;
        font-family: 'Roboto',sans-serif;
        transition: .4s;
    }
    .navbar ul li a.active,
    .navbar ul li a:hover{
        background: 0;
        border-radius: 2px;

    }
```


IOT BASED CHILD SAFETY MONI
C:/Users/God/Desktop/narmatha/Nandhini_sisterproject/Nandhini_sisterproject/Homepage.html
Home
About us
Login
Contact
Logout
SATELLITE
CLOUD SERVER
PARENTS
ON-BOARD DVR GPS
SCHOOL BUS

REGISTER PAGE:

```
<!DOCTYPE html>
<body>
    <style>
        {box-sizing: border-box}

.container {
  padding: 16px;
}
input[type=text], input[type=password] {
  width: 100%;
  padding: 15px;
  margin: 5px 0 22px 0;
  display: inline-block;
  border: none;

  background: #f1f1f1;
}

input[type=text]:focus, input[type=password]:focus {
  background-color: #ddd;
  outline: none;
}
hr {
  border: 1px solid #f1f1f1;
  margin-bottom: 25px;
}

.registerbtn {
  background-color: #04AA6D;
  color: white;
  padding: 16px 20px;
  margin: 8px 0;
  border: none;
  cursor: pointer;
  width: 100%;
  opacity: 0.9;
}

.registerbtn:hover {
  opacity:1;
}

a {
  color: dodgerblue;
}

.signin {
  background-color: #f1f1f1;
  text-align: center;
}
</body>
</html>
    </style>
```

```
<form action="action_page.php">
  <div class="container">
    <h1>Register</h1>
    <p>Please fill in this form to create an account.</p>
    <hr>

    <label for="email"><b>Email</b></label>
    <input type="text" placeholder="Enter Email" name="email" id="email" required>

    <label for="psw"><b>Password</b></label>
    <input type="password" placeholder="Enter Password" name="psw" id="psw" required>
    <label for="first name"><b>first name</b></label>
    <input type="first name" placeholder="first  name"  id="first name" required>

    <label for="psw-repeat"><b>last name</b></label>
    <input type="last name" placeholder="last name"  id="last name" required><br>

    <label for="ph.no"><b>phone number</b></label>
    <input type="text" placeholder="phone number" name="phone number" id="number"
required>

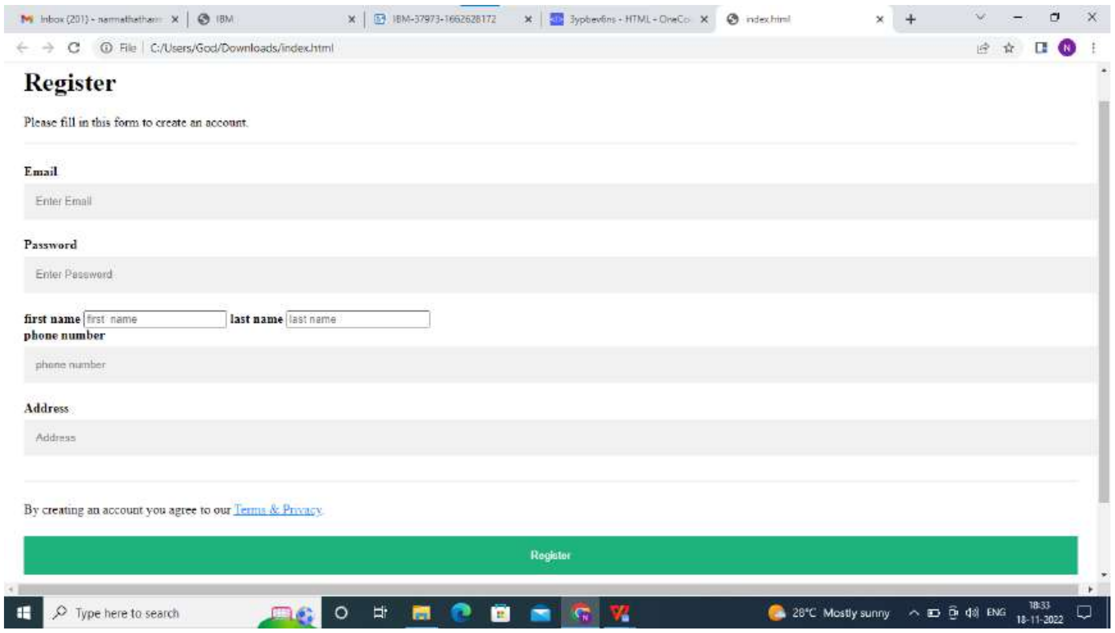
    <label for="Address"><b>Address</b></label>
    <input type="text" placeholder="Address" name="Address" id="number" required>




    <hr>

    <p>By creating an account you agree to our <a href="#">Terms & Privacy</a>.</p>
    <button type="submit" class="registerbtn">Register</button>
  </div>

  <div class="container signin">
    <p>Already have an account? <a href="#">Sign in</a>.</p>
  </div>
</form>
```



Register

Please fill in this form to create an account.

Email

Enter Email

Password

Enter Password

first name first name last name last name
phone number

phone number

Address

Address

By creating an account you agree to our Terms & Privacy.

Register

LOG IN PAGE:

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
body {font-family: Arial, Helvetica, sans-serif;}
form {border: 3px solid #f1f1f1;}

input[type=text], input[type=password] {
  width: 100%;
  padding: 12px 20px;
  margin: 8px 0;
  display: inline-block;
  border: 1px solid #ccc;
  box-sizing: border-box;
}

button {
  background-color: #04AA6D;
  color: white;
  padding: 14px 20px;
  margin: 8px 0;
  border: none;
  cursor: pointer;
  width: 100%;
}

button:hover {
  opacity: 0.8;
}

.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}

.imgcontainer {
  text-align: center;
  margin: 24px 0 12px 0;
}

img.avatar {
  width: 40%;
  border-radius: 50%;
}

.container {
  padding: 16px;
}

span.psw {
  float: right;
  padding-top: 16px;
}
@media screen and (max-width: 300px) {
  span.psw {
     display: block;
     float: none;
  }
  .cancelbtn {
     width: 100%;
  }
}
</style>
</head>
<body>
```

```
<h2>Login Form</h2>

<form action="/action_page.php" method="post">
  <div class="imgcontainer">

  </div>

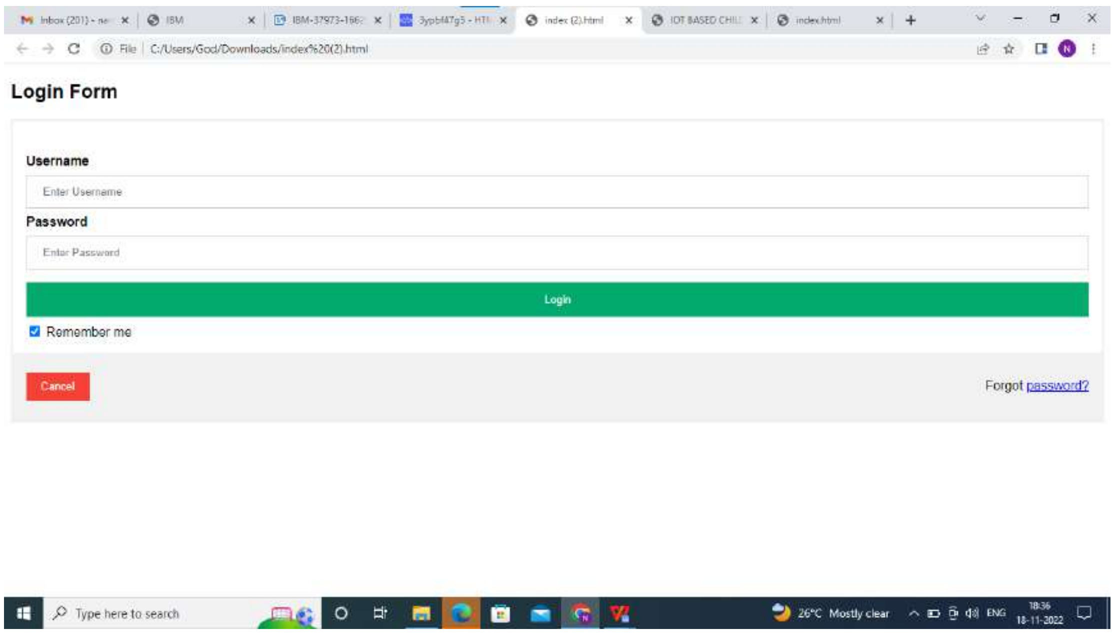
  <div class="container">
    <label for="uname"><b>Username</b></label>
    <input type="text" placeholder="Enter Username" name="uname" required>

    <label for="psw"><b>Password</b></label>
    <input type="password" placeholder="Enter Password" name="psw" required>

    <button type="submit">Login</button>
    <label>
      <input type="checkbox" checked="checked" name="remember"> Remember me
    </label>
  </div>

  <div class="container" style="background-color:#f1f1f1">
    <button type="button" class="cancelbtn">Cancel</button>
    <span class="psw">Forgot <a href="#">password?</a></span>
  </div>
</form>

</body>
</html>
```



Login Form

Username

Enter Username

Password

Enter Password

Login

Remember me

Cancel

Forgot password?