

Question 1.1. You can choose one hardware from Raspberry pi and Arduino.

1.2. Circuit Diagram is required with clearly visibility of wiring that you have implemented for making the connections.

1.3. You should implement any cloud service to send the data from App to Gateway for controlling the sensors.

1.4. Live Status of All mentioned Equipment should be clearly visible whether it is ON or OFF with color code green for ON red for OFF.

a) Control all the electrical equipment by using Raspberry pi/Arduino.

b) Consider the following details for designing of the interface.

i) Room is having – 2 Tube Lights, 2 Fans, smoke sensor with Alarm

ii) Dining room is having- 1 Tv, 2 Fans, 2 Tube Lights, Motor controlled windows and doors.

(Note: Motor controlled doors and windows are like automatic when we go closer to door it will be opened automatically either by using PIR sensor, IR sensor, Ultrasonic Sensor.)

iii) Kitchen is having- 1 Tube light, 1 Fan, 1 Induction Stove, Gas Sensor.

iv) Washroom is having – 1 Light ,1 Water geyser

v) Main Gate is having- 2 Cameras (Pi cameras) which will be controlled from APP.

vi) Get the live Level of Water in Water Tank with Alarm at full state.

vii) Get the temperature of Room and Take a decision to turn on the AC after getting presence of person inside the room.

viii) Auto off features for Lights and Fans on getting No movement in Room for 3 minutes.

```
import sys
```

```
try:
```

```
    import Tkinter as tk
```

```
except ImportError:
```

```
    import tkinter as tk
```

```
try:
```

```
    import ttk
```

```
    py3 = False
```

```
except ImportError:
```

```
    import tkinter.ttk as ttk
```

```
py3 = True

import unknown_support

def vp_start_gui():
    """Starting point when module is the main routine."""
    global val, w, root
    root = tk.Tk()
    unknown_support.set_Tk_var()
    top = Toplevel1 (root)
    unknown_support.init(root, top)
    root.mainloop()

w = None
def create_Toplevel1(rt, *args, **kwargs):
    """Starting point when module is imported by another module.
    Correct form of call: 'create_Toplevel1(root, *args, **kwargs)' ."""
    global w, w_win, root
    #rt = root
    root = rt
    w = tk.Toplevel (root)
    unknown_support.set_Tk_var()
    top = Toplevel1 (w)
    unknown_support.init(w, top, *args, **kwargs)
    return (w, top)

def destroy_Toplevel1():
    global w
    w.destroy()
    w = None

class Toplevel1:
    def __init__(self, top=None):
        """This class configures and populates the toplevel window.
        top is the toplevel containing window."""
        _bgcolor = '#d9d9d9' # X11 color: 'gray85'
        _fgcolor = '#000000' # X11 color: 'black'
        _compcolor = '#d9d9d9' # X11 color: 'gray85'
        _ana1color = '#d9d9d9' # X11 color: 'gray85'
        _ana2color = '#ececec' # Closest X11 color: 'gray92'

top.geometry("984x714+523+107")
top.minsize(148, 1)
top.maxsize(1924, 1055)
top.resizable(1, 1)
top.title("New Toplevel")
top.configure(background="#d9d9d9")

self.Labelframe1 = tk.LabelFrame(top)
self.Labelframe1.place(relx=0.022, rely=0.011, relheight=0.298
    , relwidth=0.437)
```

```
self.Labelframe1.configure(relief='groove')
self.Labelframe1.configure(foreground="black")
self.Labelframe1.configure(text="Bedroom")
self.Labelframe1.configure(background="#d9d9d9")

self.Label1 = tk.Label(self.Labelframe1)
self.Label1.place(relx=0.023, rely=0.131, height=18, width=42
    , bordermode='ignore')
self.Label1.configure(background="#d9d9d9")
self.Label1.configure(disabledforeground="#a3a3a3")
self.Label1.configure(foreground="#000000")
self.Label1.configure(text="Fan 1")

self.Label2 = tk.Label(self.Labelframe1)
self.Label2.place(relx=0.023, rely=0.263, height=18, width=42
    , bordermode='ignore')
self.Label2.configure(background="#d9d9d9")
self.Label2.configure(disabledforeground="#a3a3a3")
self.Label2.configure(foreground="#000000")
self.Label2.configure(text="Fan 2")

self.Label3 = tk.Label(self.Labelframe1)
self.Label3.place(relx=0.023, rely=0.399, height=18, width=81
    , bordermode='ignore')
self.Label3.configure(background="#d9d9d9")
self.Label3.configure(disabledforeground="#a3a3a3")
self.Label3.configure(foreground="#000000")
self.Label3.configure(text="Tubelight 1")

self.Label4 = tk.Label(self.Labelframe1)
self.Label4.place(relx=0.023, rely=0.531, height=18, width=81
    , bordermode='ignore')
self.Label4.configure(background="#d9d9d9")
self.Label4.configure(disabledforeground="#a3a3a3")
self.Label4.configure(foreground="#000000")
self.Label4.configure(text="Tubelight 2")

self.Label5 = tk.Label(self.Labelframe1)
self.Label5.place(relx=0.023, rely=0.662, height=18, width=102
    , bordermode='ignore')
self.Label5.configure(background="#d9d9d9")
self.Label5.configure(disabledforeground="#a3a3a3")
self.Label5.configure(foreground="#000000")
self.Label5.configure(text="Air Conditioner")

self.Label6 = tk.Label(self.Labelframe1)
self.Label6.place(relx=0.023, rely=0.798, height=17, width=142
    , bordermode='ignore')
self.Label6.configure(background="#d9d9d9")
self.Label6.configure(disabledforeground="#a3a3a3")
self.Label6.configure(foreground="#000000")
```

```
self.Label6.configure(text=""Current Temperature:"")

self.temp_indicator = tk.Label(self.Labelframe1)
self.temp_indicator.place(relx=0.395, rely=0.793, height=19, width=102
    , bordermode='ignore')
self.temp_indicator.configure(background="#d9d9d9")
self.temp_indicator.configure(borderwidth="4")
self.temp_indicator.configure(disabledforeground="#a3a3a3")
self.temp_indicator.configure(foreground="#000000")
self.temp_indicator.configure(textvariable=unknown_support.temp)

self.Button1 = tk.Button(self.Labelframe1)
self.Button1.place(relx=0.186, rely=0.131, height=23, width=22
    , bordermode='ignore')
self.Button1.configure(activebackground="#37df0d")
self.Button1.configure(activeforeground="#000000")
self.Button1.configure(background="#ff0f0f")
self.Button1.configure(disabledforeground="#a3a3a3")
self.Button1.configure(foreground="#000000")
self.Button1.configure(highlightbackground="#d9d9d9")
self.Button1.configure(highlightcolor="black")
self.Button1.configure(pady="0")

self.Button1_4 = tk.Button(self.Labelframe1)
self.Button1_4.place(relx=0.279, rely=0.399, height=23, width=22
    , bordermode='ignore')
self.Button1_4.configure(activebackground="#37df0d")
self.Button1_4.configure(activeforeground="#000000")
self.Button1_4.configure(background="#ff0f0f")
self.Button1_4.configure(disabledforeground="#a3a3a3")
self.Button1_4.configure(foreground="#000000")
self.Button1_4.configure(highlightbackground="#d9d9d9")
self.Button1_4.configure(highlightcolor="black")
self.Button1_4.configure(pady="0")

self.Button1_5 = tk.Button(self.Labelframe1)
self.Button1_5.place(relx=0.186, rely=0.254, height=23, width=22
    , bordermode='ignore')
self.Button1_5.configure(activebackground="#37df0d")
self.Button1_5.configure(activeforeground="#000000")
self.Button1_5.configure(background="#ff0f0f")
self.Button1_5.configure(disabledforeground="#a3a3a3")
self.Button1_5.configure(foreground="#000000")
self.Button1_5.configure(highlightbackground="#d9d9d9")
self.Button1_5.configure(highlightcolor="black")
self.Button1_5.configure(pady="0")

self.Button1_6 = tk.Button(self.Labelframe1)
self.Button1_6.place(relx=0.279, rely=0.54, height=23, width=22
    , bordermode='ignore')
self.Button1_6.configure(activebackground="#37df0d")
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self.Button1_6.configure(activeforeground="#000000")
self.Button1_6.configure(background="#ff0f0f")
self.Button1_6.configure(disabledforeground="#a3a3a3")
self.Button1_6.configure(foreground="#000000")
self.Button1_6.configure(highlightbackground="#d9d9d9")
self.Button1_6.configure(highlightcolor="black")
self.Button1_6.configure(pady="0")

self.Button1_6 = tk.Button(self.Labelframe1)
self.Button1_6.place(relx=0.349, rely=0.648, height=23, width=22
    , bordermode='ignore')
self.Button1_6.configure(activebackground="#37df0d")
self.Button1_6.configure(activeforeground="#000000")
self.Button1_6.configure(background="#ff0f0f")
self.Button1_6.configure(disabledforeground="#a3a3a3")
self.Button1_6.configure(foreground="#000000")
self.Button1_6.configure(highlightbackground="#d9d9d9")
self.Button1_6.configure(highlightcolor="black")
self.Button1_6.configure(pady="0")

self.Labelframe1_8 = tk.LabelFrame(top)
self.Labelframe1_8.place(relx=0.478, rely=0.013, relheight=0.203
    , relwidth=0.437)
self.Labelframe1_8.configure(relief='groove')
self.Labelframe1_8.configure(foreground="black")
self.Labelframe1_8.configure(text="Kitchen")
self.Labelframe1_8.configure(background="#d9d9d9")
self.Labelframe1_8.configure(cursor="fleur")
self.Labelframe1_8.configure(highlightbackground="#d9d9d9")
self.Labelframe1_8.configure(highlightcolor="black")

self.Label1_9 = tk.Label(self.Labelframe1_8)
self.Label1_9.place(relx=0.023, rely=0.138, height=28, width=42
    , bordermode='ignore')
self.Label1_9.configure(activebackground="#f9f9f9")
self.Label1_9.configure(activeforeground="black")
self.Label1_9.configure(background="#d9d9d9")
self.Label1_9.configure(disabledforeground="#a3a3a3")
self.Label1_9.configure(foreground="#000000")
self.Label1_9.configure(highlightbackground="#d9d9d9")
self.Label1_9.configure(highlightcolor="black")
self.Label1_9.configure(text="Fan 1")

self.Label3_11 = tk.Label(self.Labelframe1_8)
self.Label3_11.place(relx=0.023, rely=0.407, height=29, width=81
    , bordermode='ignore')
self.Label3_11.configure(activebackground="#f9f9f9")
self.Label3_11.configure(activeforeground="black")
self.Label3_11.configure(background="#d9d9d9")
self.Label3_11.configure(disabledforeground="#a3a3a3")
self.Label3_11.configure(foreground="#000000")
```

```
self.Label3_11.configure(highlightbackground="#d9d9d9")
self.Label3_11.configure(highlightcolor="black")
self.Label3_11.configure(text="Tubelight 1")

self.Label5_13 = tk.Label(self.Labelframe1_8)
self.Label5_13.place(relx=0.023, rely=0.759, height=12, width=112
    , bordermode='ignore')
self.Label5_13.configure(activebackground="#f9f9f9")
self.Label5_13.configure(activeforeground="black")
self.Label5_13.configure(background="#d9d9d9")
self.Label5_13.configure(disabledforeground="#a3a3a3")
self.Label5_13.configure(foreground="#000000")
self.Label5_13.configure(highlightbackground="#d9d9d9")
self.Label5_13.configure(highlightcolor="black")
self.Label5_13.configure(text="Induction Stove")

self.Button1_16 = tk.Button(self.Labelframe1_8)
self.Button1_16.place(relx=0.186, rely=0.172, height=23, width=22
    , bordermode='ignore')
self.Button1_16.configure(activebackground="#37df0d")
self.Button1_16.configure(activeforeground="#000000")
self.Button1_16.configure(background="#ff0f0f")
self.Button1_16.configure(cursor="fleur")
self.Button1_16.configure(disabledforeground="#a3a3a3")
self.Button1_16.configure(foreground="#000000")
self.Button1_16.configure(highlightbackground="#d9d9d9")
self.Button1_16.configure(highlightcolor="black")
self.Button1_16.configure(pady="0")

self.Button1_5 = tk.Button(self.Labelframe1_8)
self.Button1_5.place(relx=0.302, rely=0.407, height=23, width=22
    , bordermode='ignore')
self.Button1_5.configure(activebackground="#37df0d")
self.Button1_5.configure(activeforeground="#000000")
self.Button1_5.configure(background="#ff0f0f")
self.Button1_5.configure(disabledforeground="#a3a3a3")
self.Button1_5.configure(foreground="#000000")
self.Button1_5.configure(highlightbackground="#d9d9d9")
self.Button1_5.configure(highlightcolor="black")
self.Button1_5.configure(pady="0")

self.Button1_7 = tk.Button(self.Labelframe1_8)
self.Button1_7.place(relx=0.372, rely=0.703, height=23, width=22
    , bordermode='ignore')
self.Button1_7.configure(activebackground="#37df0d")
self.Button1_7.configure(activeforeground="#000000")
self.Button1_7.configure(background="#ff0f0f")
self.Button1_7.configure(disabledforeground="#a3a3a3")
self.Button1_7.configure(foreground="#000000")
self.Button1_7.configure(highlightbackground="#d9d9d9")
self.Button1_7.configure(highlightcolor="black")
```

```
self.Button1_7.configure(pady="0")

self.Labelframe1_8 = tk.LabelFrame(top)
self.Labelframe1_8.place(relx=0.02, rely=0.324, relheight=0.276
    , relwidth=0.437)
self.Labelframe1_8.configure(relief='groove')
self.Labelframe1_8.configure(foreground="black")
self.Labelframe1_8.configure(text="Dining Room")
self.Labelframe1_8.configure(background="#d9d9d9")
self.Labelframe1_8.configure(highlightbackground="#d9d9d9")
self.Labelframe1_8.configure(highlightcolor="black")

self.Label1_9 = tk.Label(self.Labelframe1_8)
self.Label1_9.place(relx=0.023, rely=0.132, height=17, width=42
    , bordermode='ignore')
self.Label1_9.configure(activebackground="#f9f9f9")
self.Label1_9.configure(activeforeground="black")
self.Label1_9.configure(background="#d9d9d9")
self.Label1_9.configure(disabledforeground="#a3a3a3")
self.Label1_9.configure(foreground="#000000")
self.Label1_9.configure(highlightbackground="#d9d9d9")
self.Label1_9.configure(highlightcolor="black")
self.Label1_9.configure(text="Fan 1")

self.Label2_10 = tk.Label(self.Labelframe1_8)
self.Label2_10.place(relx=0.023, rely=0.264, height=17, width=42
    , bordermode='ignore')
self.Label2_10.configure(activebackground="#f9f9f9")
self.Label2_10.configure(activeforeground="black")
self.Label2_10.configure(background="#d9d9d9")
self.Label2_10.configure(disabledforeground="#a3a3a3")
self.Label2_10.configure(foreground="#000000")
self.Label2_10.configure(highlightbackground="#d9d9d9")
self.Label2_10.configure(highlightcolor="black")
self.Label2_10.configure(text="Fan 2")

self.Label3_11 = tk.Label(self.Labelframe1_8)
self.Label3_11.place(relx=0.023, rely=0.396, height=17, width=81
    , bordermode='ignore')
self.Label3_11.configure(activebackground="#f9f9f9")
self.Label3_11.configure(activeforeground="black")
self.Label3_11.configure(background="#d9d9d9")
self.Label3_11.configure(disabledforeground="#a3a3a3")
self.Label3_11.configure(foreground="#000000")
self.Label3_11.configure(highlightbackground="#d9d9d9")
self.Label3_11.configure(highlightcolor="black")
self.Label3_11.configure(text="Tubelight 1")

self.Label4_12 = tk.Label(self.Labelframe1_8)
self.Label4_12.place(relx=0.023, rely=0.533, height=16, width=81
    , bordermode='ignore')
```

```
self.Label4_12.configure(activebackground="#f9f9f9")
self.Label4_12.configure(activeforeground="black")
self.Label4_12.configure(background="#d9d9d9")
self.Label4_12.configure(disabledforeground="#a3a3a3")
self.Label4_12.configure(foreground="#000000")
self.Label4_12.configure(highlightbackground="#d9d9d9")
self.Label4_12.configure(highlightcolor="black")
self.Label4_12.configure(text="Tubelight 2")

self.Label5_13 = tk.Label(self.Labelframe1_8)
self.Label5_13.place(relx=0.023, rely=0.665, height=17, width=72
    , bordermode='ignore')
self.Label5_13.configure(activebackground="#f9f9f9")
self.Label5_13.configure(activeforeground="black")
self.Label5_13.configure(background="#d9d9d9")
self.Label5_13.configure(disabledforeground="#a3a3a3")
self.Label5_13.configure(foreground="#000000")
self.Label5_13.configure(highlightbackground="#d9d9d9")
self.Label5_13.configure(highlightcolor="black")
self.Label5_13.configure(text="Television")

self.Button1_16 = tk.Button(self.Labelframe1_8)
self.Button1_16.place(relx=0.186, rely=0.132, height=23, width=22
    , bordermode='ignore')
self.Button1_16.configure(activebackground="#37df0d")
self.Button1_16.configure(activeforeground="#000000")
self.Button1_16.configure(background="#ff0f0f")
self.Button1_16.configure(disabledforeground="#a3a3a3")
self.Button1_16.configure(foreground="#000000")
self.Button1_16.configure(highlightbackground="#d9d9d9")
self.Button1_16.configure(highlightcolor="black")
self.Button1_16.configure(pady="0")

self.Button1_5 = tk.Button(self.Labelframe1_8)
self.Button1_5.place(relx=0.279, rely=0.401, height=23, width=22
    , bordermode='ignore')
self.Button1_5.configure(activebackground="#37df0d")
self.Button1_5.configure(activeforeground="#000000")
self.Button1_5.configure(background="#ff0f0f")
self.Button1_5.configure(disabledforeground="#a3a3a3")
self.Button1_5.configure(foreground="#000000")
self.Button1_5.configure(highlightbackground="#d9d9d9")
self.Button1_5.configure(highlightcolor="black")
self.Button1_5.configure(pady="0")

self.Button1_6 = tk.Button(self.Labelframe1_8)
self.Button1_6.place(relx=0.186, rely=0.254, height=23, width=22
    , bordermode='ignore')
self.Button1_6.configure(activebackground="#37df0d")
self.Button1_6.configure(activeforeground="#000000")
self.Button1_6.configure(background="#ff0f0f")
```



```
self.Button1_6.configure(disabledforeground="#a3a3a3")
self.Button1_6.configure(foreground="#000000")
self.Button1_6.configure(highlightbackground="#d9d9d9")
self.Button1_6.configure(highlightcolor="black")
self.Button1_6.configure(pady="0")

self.Button1_7 = tk.Button(self.Labelframe1_8)
self.Button1_7.place(relx=0.279, rely=0.543, height=23, width=22
    , bordermode='ignore')
self.Button1_7.configure(activebackground="#37df0d")
self.Button1_7.configure(activeforeground="#000000")
self.Button1_7.configure(background="#ff0f0f")
self.Button1_7.configure(disabledforeground="#a3a3a3")
self.Button1_7.configure(foreground="#000000")
self.Button1_7.configure(highlightbackground="#d9d9d9")
self.Button1_7.configure(highlightcolor="black")
self.Button1_7.configure(pady="0")

self.Button1_7 = tk.Button(self.Labelframe1_8)
self.Button1_7.place(relx=0.233, rely=0.675, height=23, width=22
    , bordermode='ignore')
self.Button1_7.configure(activebackground="#37df0d")
self.Button1_7.configure(activeforeground="#000000")
self.Button1_7.configure(background="#ff0f0f")
self.Button1_7.configure(disabledforeground="#a3a3a3")
self.Button1_7.configure(foreground="#000000")
self.Button1_7.configure(highlightbackground="#d9d9d9")
self.Button1_7.configure(highlightcolor="black")
self.Button1_7.configure(pady="0")

self.Labelframe1_9 = tk.LabelFrame(top)
self.Labelframe1_9.place(relx=0.478, rely=0.227, relheight=0.204
    , relwidth=0.437)
self.Labelframe1_9.configure(relief='groove')
self.Labelframe1_9.configure(foreground="black")
self.Labelframe1_9.configure(text=""Washroom"")
self.Labelframe1_9.configure(background="#d9d9d9")
self.Labelframe1_9.configure(highlightbackground="#d9d9d9")
self.Labelframe1_9.configure(highlightcolor="black")

self.Label1_10 = tk.Label(self.Labelframe1_9)
self.Label1_10.place(relx=0.023, rely=0.116, height=29, width=92
    , bordermode='ignore')
self.Label1_10.configure(activebackground="#f9f9f9")
self.Label1_10.configure(activeforeground="black")
self.Label1_10.configure(background="#d9d9d9")
self.Label1_10.configure(disabledforeground="#a3a3a3")
self.Label1_10.configure(foreground="#000000")
self.Label1_10.configure(highlightbackground="#d9d9d9")
self.Label1_10.configure(highlightcolor="black")
self.Label1_10.configure(text=""Water Geyser"")
```

```
self.Label3_12 = tk.Label(self.Labelframe1_9)
self.Label3_12.place(relx=0.023, rely=0.411, height=29, width=41
    , bordermode='ignore')
self.Label3_12.configure(activebackground="#f9f9f9")
self.Label3_12.configure(activeforeground="black")
self.Label3_12.configure(background="#d9d9d9")
self.Label3_12.configure(disabledforeground="#a3a3a3")
self.Label3_12.configure(foreground="#000000")
self.Label3_12.configure(highlightbackground="#d9d9d9")
self.Label3_12.configure(highlightcolor="black")
self.Label3_12.configure(text="Light")

self.Label5_14 = tk.Label(self.Labelframe1_9)
self.Label5_14.place(relx=0.023, rely=0.699, height=21, width=112
    , bordermode='ignore')
self.Label5_14.configure(activebackground="#f9f9f9")
self.Label5_14.configure(activeforeground="black")
self.Label5_14.configure(background="#d9d9d9")
self.Label5_14.configure(cursor="fleur")
self.Label5_14.configure(disabledforeground="#a3a3a3")
self.Label5_14.configure(foreground="#000000")
self.Label5_14.configure(highlightbackground="#d9d9d9")
self.Label5_14.configure(highlightcolor="black")
self.Label5_14.configure(text="Water Tank Level")

self.Button1_15 = tk.Button(self.Labelframe1_9)
self.Button1_15.place(relx=0.302, rely=0.178, height=23, width=22
    , bordermode='ignore')
self.Button1_15.configure(activebackground="#37df0d")
self.Button1_15.configure(activeforeground="#000000")
self.Button1_15.configure(background="#ff0f0f")
self.Button1_15.configure(disabledforeground="#a3a3a3")
self.Button1_15.configure(foreground="#000000")
self.Button1_15.configure(highlightbackground="#d9d9d9")
self.Button1_15.configure(highlightcolor="black")
self.Button1_15.configure(pady="0")

self.Button1_6 = tk.Button(self.Labelframe1_9)
self.Button1_6.place(relx=0.186, rely=0.411, height=23, width=22
    , bordermode='ignore')
self.Button1_6.configure(activebackground="#37df0d")
self.Button1_6.configure(activeforeground="#000000")
self.Button1_6.configure(background="#ff0f0f")
self.Button1_6.configure(disabledforeground="#a3a3a3")
self.Button1_6.configure(foreground="#000000")
self.Button1_6.configure(highlightbackground="#d9d9d9")
self.Button1_6.configure(highlightcolor="black")
self.Button1_6.configure(pady="0")
```

```
self.Water_level = tk.Label(self.Labelframe1_9)
```

```
self.Water_level.place(relx=0.349, rely=0.699, height=18, width=102
                        , bordermode='ignore')
self.Water_level.configure(activebackground="#f9f9f9")
self.Water_level.configure(activeforeground="black")
self.Water_level.configure(background="#d9d9d9")
self.Water_level.configure(borderwidth="4")
self.Water_level.configure(disabledforeground="#a3a3a3")
self.Water_level.configure(foreground="#000000")
self.Water_level.configure(highlightbackground="#d9d9d9")
self.Water_level.configure(highlightcolor="black")
self.Water_level.configure(textvariable=unknown_support.temp)

if __name__ == '__main__':
    vp_start_gui()
```

Output: