ELEMENTS OF THE PYTHON CODE

# IMPORTING LIBRARIES

To take attendance of all employees and record them into a proper file, we need to import some libraries in the python file.

## CSV

Csv library creates a csv file which stores data values in a table format which keeps all the information in a systematic way. The data is mainly separated by commas which names it comma separated values (CSV). These files are commonly used for handling multiple data entries such as sales or attendance record. In this project, we will use this library to record all the information of the employees tin a systematic tabular format. This will make it easy to record all the data and access it when needed by anyone.

## DATETIME

Datetime library mainly works with data and time which need to be recorded. In this project, we will use import datetime method to record the timing of the attendance of the employees. In order to record date and time here, we will use strftime() method to format the date and time in the form of a string.

# CLASS

A class is a user defined data type. We can store multiple functions in a class and interlink then using self attribute. In our program, we have used a class named Employee\_Database which contains all the code for the system.

# FUNCTIONS

A function is a set of code that is made in a python file which can be executed multiple times when needed. To make a function, we use def followed by the name of the function ending with closed parenthesis with arguments (if needed) and a colon. A function in a python program can be called by its name. in our python code, we will use three functions:

* attendance\_record: takes and manages attendance of the employees.
* rota: manages and displays the work patterns of the employees.
* employee\_benefits: contains information about the benefits that are provided to the workers of the company.

# DICTIONARIES

Dictionary is a collection of key value pairs. Each value is a combination of a piece of information and its key value. A dictionary is represented with {} where key values are separated with colons. Here, we will use many dictionaries.

* Attendance: It will hold the name of the employee and the time of the attendance.
* Employees: holds the name of the employees.
* Employee\_rota: Holds the information about availability of employees on several days.
* Shifts: Indicates the employees required on the particular days at the workplace.
* Benefits dictionary includes information about the benefits given to the employees of the company.

# LOOPS

## WHILE LOOP

While loop is a statement that is used when we want to run a reoccurring loop until a specified condition is satisfied. The loop executes itself until the condition provided to it turns out to be false. Here we have used two while loops.

* Accepting values of the employee names until the input is written “done”. When user writes ‘done’, it satisfies the condition and exits the loop.
* At the end of the program, we created a while loop that runs on the very staring of the code. This loop contains a list of instructions printed and all the functions can be called by the user by entering the instructed inputs.

## FOR LOOP

For loop is used to repeat over a same block of code for all repeatable sequences. This loop can be used over a string, tuple or list. In our project, we have used many for loops for the shift allotments.

* In first loop, we created a list named shift\_allotment that appends for every iteration in the shifts dictionary.
* In second loop, for every iteration in employees dictionary, conditions are tested and then the required data is added and displayed to the user.

Also, a for loop is used in the function named benefits:

* The loop iterates for every value and display the corresponding benefits line by line.

# CONDITIONAL STATEMENTS

## IF-ELSE

IF-ELSE is a conditional statement that check if the condition is true, implements the code, or if it is false, pass it on to the other if or else statements. The code runs until the condition is matched and the specified code is executed. In our python code we have used many conditional statements.

* In first function, conditional statement is used to get input names from the user and then the condition is set that if user enters ‘done’ the code breaks.

## NESTED IF-ELSE STATEMENT

When a conditional statement is entered under an existing conditional statement, it is called nested loop. It can be used to test multiple if else statement and make the code shorter and simpler.

* In allotting shifts to the employees, we used nested if statement that firstly checks the availability of the employee and under the condition it checks if the current shift day is already set up in the dictionary.

# WITH STATEMENT

This statement is a compound statement which is used when we need to refer some data from another location. Here in the program, we have used with statement to check the attendance recorded, keep it in reference and append new data entries into it.