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TIME – TABLE GENERATOR

Table of Contents

Introduction:-

- A Timetable Generator is a software application programmed in the C programming language that makes an otherwise laborious task of doing schedules or timetables easier and automated. Creating an efficient, conflict-free timetable for classes, teachers in educational institutions is quite a time-consuming and complex task

- This project uses the logical properties of C to solve this problem by implementing algorithms that consider all the given constraints: subjects taught and time slots.

- This way, institutions can avoid errors, save time, and ensure a fair share of resources. The program is created for both intuitive and user-friendly applications, making it a very useful tool for the administrator.

Objective:-

The primary goal of the Time Table Generator project is to automatically generate a conflict-free timetable, ensuring that the following constraints and requirements are met:

1- Resource Allocation: Teachers, Subjects without overcrowding or other conflicts in a given time slot

2- Efficiency: Use less time and effort to create timetables

3- Scalability: Support various input data sizes-ranging from small schools to larger institutions.

4- Flexibility: customizable constraints which can be used by students as well as faculty.

5- Error Minimization: The generated timetable follows predefined constraints and thus has fewer manual correction errors.

This project demonstrates how C programming can be used to address real-world problems effectively by showing modular programming techniques, the utilization of data structure, and algorithm design.

Algorithm:-

- Step 1:- Start
- Step 2:- Input s (total number of subjects)
- Step 3: Take input of subject's name and store in subject[i]
- Step 4:- Initialize a table with days in rows and time in columns

  char table[6][8][50];
- Step 5:- Choose between S for students or F for faculty

  scanf(" %c",&type);
- Step 6:- If S is chosen then if (i<7) then fill slots with subjects randomize it randomSubject(subject,s);

  and store in subjectArrays[i][j] then copy it to table
- Step 7:- If F is chosen then check if subjects are (i<7) then fill in subArr[i]
- Step 7a:- Randomize it

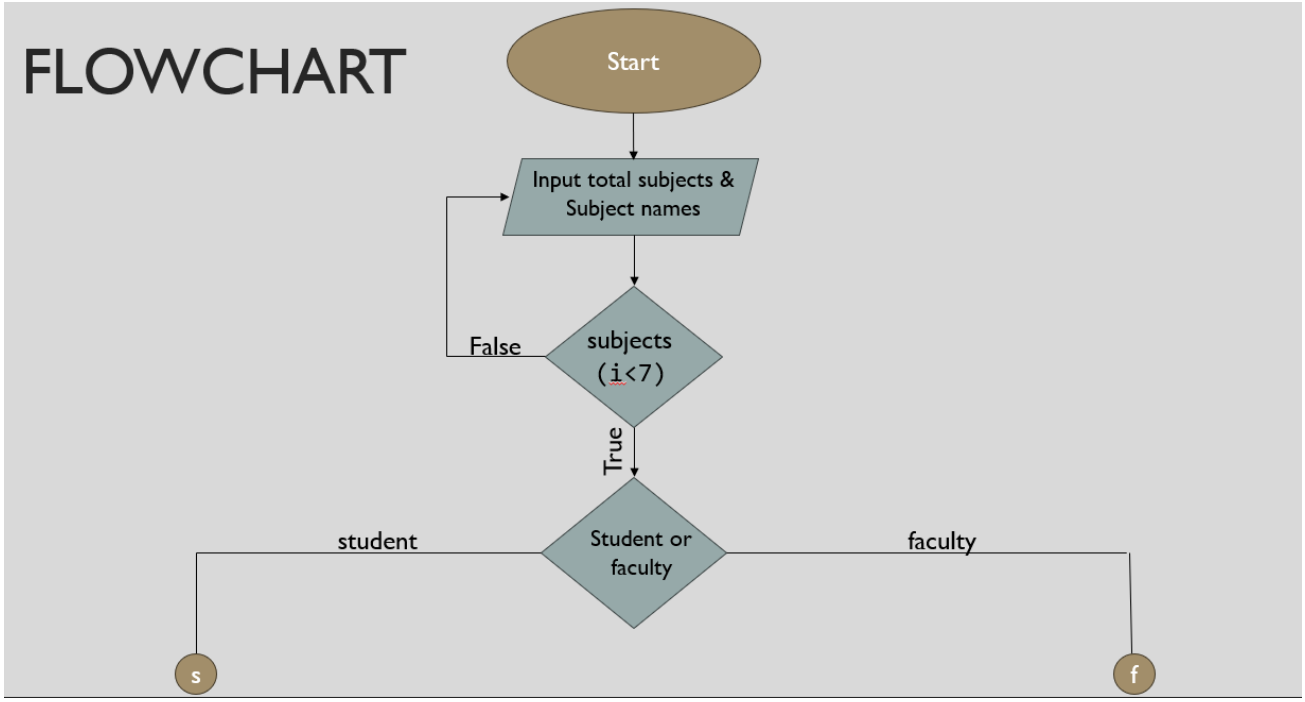
  randomSubject(subArr,s); to get different divisions and store in facArrays[i][j]
- Step 7b:- Ask the faculty for subject and then using switch case copy divisions in which faculty has lecture
- Step 7c:- Take divisions and fill in table to get timetable

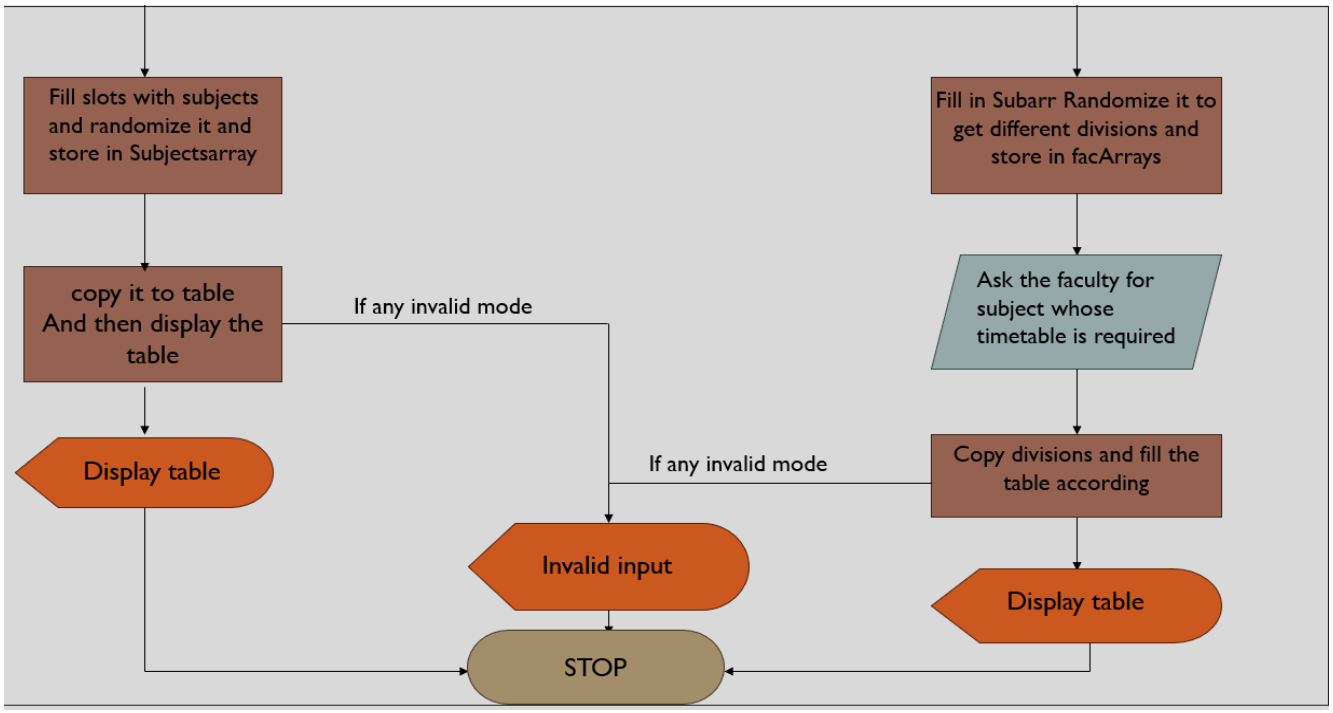
  table[i][j]
- Step 8:- If any mode in switch case is invalid then print invalid input

  default:

  printf("Invalid Input");
- Step 9:- End the code

FLOWCHART:-





INPUT CODE:-

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

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

void randomSubject(char array[7][100],int n){
    int j;
    char temp[20];
    for(int i=7-1;i>0;i--)
    {
        j = rand()%(i+1);
        strcpy(temp, array[i]);
        strcpy(array[i], array[j]);
        strcpy(array[j], temp);
    }
}
int main()
{
    int s,i;
    printf("Enter the total number of subject :");
    scanf("%d",&s);
    while(s>=8)
    {
        printf("Subjects cannot be more than 7 \n");
        printf("Enter the total number of subject :");
        scanf("%d",&s);
    }
        char table[6][8][50];
        strcpy(table[0][0],"|.........|");
        strcpy(table[0][1],"| 11-12 |");
        strcpy(table[0][2],"| 12-1 |");
        strcpy(table[0][3],"| 1-2 |");
        strcpy(table[0][4],"| 2-3 |");
        strcpy(table[0][5],"| 3-4 |");
        strcpy(table[0][6],"| 4-5 |");
        strcpy(table[0][7],"| 5-6 |");
        strcpy(table[1][0],"MONDAY   |");
        strcpy(table[2][0],"TUESDAY  |");
        strcpy(table[3][0],"WEDNESDAY|");
        strcpy(table[4][0],"THURSDAY |");
        strcpy(table[5][0],"FRIDAY   |");

        char subject[7][100];

            for(i=0;i<s;i++)
            {
                printf("Enter %d subject : ",i+1);
                scanf(" %s",&subject[i]);
            }
            char subArr[7][100] = {"DIV A","DIV B","DIV C"};
            srand(time(NULL));
            char type;
            printf("S for student\nF for Faculty :");
            scanf(" %c",&type);

        switch(type)
        {
            case 's':
                    if(i<7)
                    {
                        for(i;i<7;i++)
                        {
```

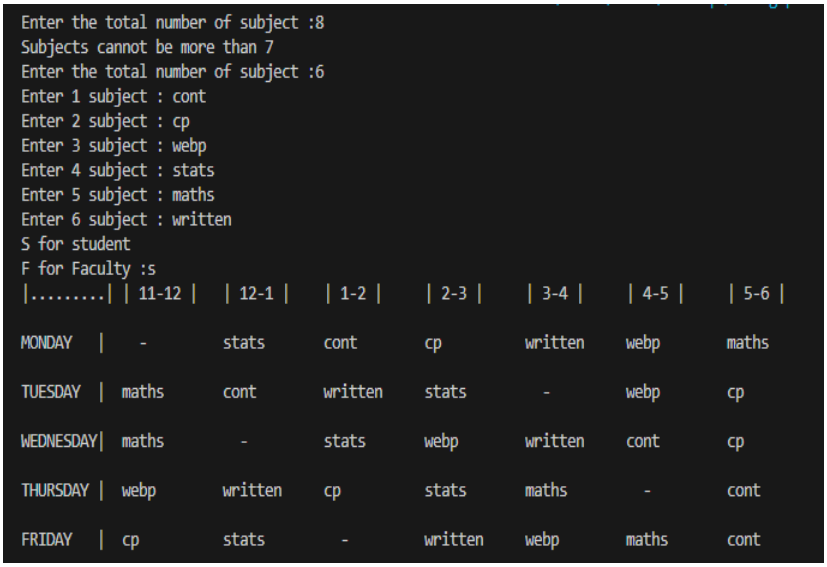
```
                    strcpy(subject[i],"  -  ");
                }
            }
            char subjectArrays[5][7][100];

            for(int i=0;i<5;i++){
                randomSubject(subject,s);
                for(int j=0;j<7;j++)
                {
                    strcpy(subjectArrays[i][j],subject[j]);
                }
            }
                for (int i = 1; i < 6; i++) {
                    for (int j = 1; j < 8; j++) {
                        strcpy(table[i][j],subjectArrays[i-1][j-1]);
                    }
                }
            for (int i = 0; i < 6 ;i++)
                {
                for (int j = 0; j < 8; j++)
                {
                    printf("%-12s", table[i][j]);
                }
                printf("\n");
                printf("\n");
            }
        break;

    case 'f':

        for(int i=3;i<7;i++)
        {
            strcpy(subArr[i],"  -  ");
        }
        char facArrays[5][7][100];

        for(int i=0;i<5;i++){
            randomSubject(subArr,s);
            for(int j=0;j<7;j++)
            {
                strcpy(facArrays[i][j],subArr[j]);
            }
        }

        char typef;
        printf("Enter Your Subject :\n\n");
        printf("c for CP\n w for IWP\n m for MATHS\n i for CONT.INDIA\n r for WRT.COM\n t for
STATS\n d for DRAWING \n :-");
        scanf(" %c",&typef);
            switch(typef)
            {
            case 'c':
                printf("TIME TABLE FOR COMPUTER PROGRAMMING :\n");
                for (int i = 1; i < 6; i++) {
                        for (int j = 1; j < 8; j++) {
                            strcpy(table[i][j],facArrays[i-1][j-1]);
                        }
                    }

                for (int i = 0; i < 6 ;i++)
```

```
        {
        for (int j = 0; j < 8; j++)
        {
            printf("%-12s", table[i][j]);
        }
        printf("\n");
    }
    break;
case 'w':
    printf("TIME TABLE FOR WEB PROGRAMMING :\n");
    for (int i = 1; i < 6; i++) {
            for (int j = 1; j < 8; j++) {
                strcpy(table[i][j],facArrays[i-1][j-1]);
            }
        }

    for (int i = 0; i < 6 ;i++)
        {
        for (int j = 0; j < 8; j++)
        {
            printf("%-12s", table[i][j]);
        }
        printf("\n");
    }
    break;
case 'm':
    printf("TIME TABLE FOR MATHEMATICS 1 :\n");
    for (int i = 1; i < 6; i++) {
            for (int j = 1; j < 8; j++) {
                strcpy(table[i][j],facArrays[i-1][j-1]);
            }
        }

    for (int i = 0; i < 6 ;i++)
        {
        for (int j = 0; j < 8; j++)
        {
            printf("%-12s", table[i][j]);
        }
        printf("\n");
    }
    break;
case 'i':
    printf("TIME TABLE FOR CONTEMPARORY OF INDIA :\n");
    for (int i = 1; i < 6; i++) {
            for (int j = 1; j < 8; j++) {
                strcpy(table[i][j],facArrays[i-1][j-1]);
            }
        }

    for (int i = 0; i < 6 ;i++)
        {
        for (int j = 0; j < 8; j++)
        {
            printf("%-12s", table[i][j]);
        }
        printf("\n");
    }
    break;
case 'r':
```

```
                printf("TIME TABLE FOR WRITTEN COMMUNICATION:\n");
                for (int i = 1; i < 6; i++) {
                        for (int j = 1; j < 8; j++) {
                            strcpy(table[i][j],facArrays[i-1][j-1]);
                        }
                    }
                for (int i = 0; i < 6 ;i++)
                    {
                    for (int j = 0; j < 8; j++)
                    {
                        printf("%-12s", table[i][j]);
                    }
                    printf("\n");
                }
                break;
            case 't':
                printf("TIME TABLE FOR STATISTICS :\n");
                for (int i = 1; i < 6; i++) {
                        for (int j = 1; j < 8; j++) {
                            strcpy(table[i][j],facArrays[i-1][j-1]);
                        }
                    }
                for (int i = 0; i < 6 ;i++)
                    {
                    for (int j = 0; j < 8; j++)
                    {
                        printf("%-12s", table[i][j]);
                    }
                    printf("\n");
                }
                break;
            case 'd':
                printf("TIME TABLE FOR ENGINEERING DRAWING :\n");
                for (int i = 1; i < 6; i++) {
                        for (int j = 1; j < 8; j++) {
                            strcpy(table[i][j],facArrays[i-1][j-1]);
                        }
                    }

                for (int i = 0; i < 6 ;i++)
                    {
                    for (int j = 0; j < 8; j++)
                    {
                        printf("%-12s", table[i][j]);
                    }
                    printf("\n");
                }
                break;
                 default:
                    printf("Invalid Input");
            }

        }

    return 0;
}
```

OUTPUT:-

For students



```
Enter the total number of subject :8
Subjects cannot be more than 7
Enter the total number of subject :6
Enter 1 subject : cont
Enter 2 subject : cp
Enter 3 subject : webp
Enter 4 subject : stats
Enter 5 subject : maths
Enter 6 subject : written
S for student
F for Faculty :s
|.........| | 11-12 |   | 12-1 |    | 1-2 |     | 2-3 |     | 3-4 |     | 4-5 |     | 5-6 |

MONDAY   |    -        stats       cont        cp          written     webp        maths

TUESDAY  | maths       cont        written     stats         -         webp        cp

WEDNESDAY| maths         -         stats       webp        written     cont        cp

THURSDAY | webp        written     cp          stats       maths         -         cont

FRIDAY   | cp          stats         -         written     webp        maths       cont
```

```
Enter the total number of subject :6
Enter 1 subject : cont
Enter 2 subject : cp
Enter 3 subject : webp
Enter 4 subject : stats
Enter 5 subject : maths
Enter 6 subject : written
S for student
F for Faculty :s
|.........| | 11-12 |   | 12-1 |    | 1-2 |     | 2-3 |     | 3-4 |     | 4-5 |     | 5-6 |

MONDAY   |    -        cont        cp          stats       webp        maths       written

TUESDAY  | cont        written     webp        cp            -         stats       maths

WEDNESDAY| stats       maths       cont        webp          -         cp          written

THURSDAY | cont        stats       cp            -         webp        written     maths

FRIDAY   | cp          cont        webp        stats       maths         -         written
```

For Faculty

```
Enter the total number of subject :9
Subjects cannot be more than 7
Enter the total number of subject :8
Subjects cannot be more than 7
Enter the total number of subject :6
Enter 1 subject : cont
Enter 2 subject : cp
Enter 3 subject : written
Enter 4 subject : stats
Enter 5 subject : maths
Enter 6 subject : webp
S for student
F for Faculty :f
Enter Your Subject :

c for CP
 w for IWP
 m for MATHS
 i for CONT.INDIA
 r for WRT.COM
 t for STATS
 d for DRAWING
 :-m
TIME TABLE FOR MATHEMATICS 1 :
|.........| | 11-12 |    | 12-1 |     | 1-2 |      | 2-3 |      | 3-4 |      | 4-5 |      | 5-6 |
MONDAY    |     -          DIV B          -            -            -          DIV A        DIV C
TUESDAY   |   DIV C          -          DIV B          -          DIV A          -            -
WEDNESDAY|   DIV C          -            -          DIV B          -            -          DIV A
THURSDAY |     -            -            -            -          DIV B        DIV A        DIV C
FRIDAY    |     -          DIV C        DIV A          -          DIV B          -            -
```

```
Enter the total number of subject :5
Enter 1 subject : webp
Enter 2 subject : ed
Enter 3 subject : stats
Enter 4 subject : maths
Enter 5 subject : cont
S for student
F for Faculty :f
Enter Your Subject :

c for CP
 w for IWP
 m for MATHS
 i for CONT.INDIA
 r for WRT.COM
 t for STATS
 d for DRAWING
 :-t
TIME TABLE FOR STATISTICS :
|.........| | 11-12 |   | 12-1 |    | 1-2 |     | 2-3 |     | 3-4 |     | 4-5 |     | 5-6 |
MONDAY    |    -           -           -          DIV C         -          DIV B       DIV A
TUESDAY   |    -         DIV B         -            -         DIV A          -         DIV C
WEDNESDAY|  DIV B       DIV A         -            -         DIV C          -           -
THURSDAY |  DIV A         -           -          DIV B         -          DIV C         -
FRIDAY    |  DIV B       DIV A         -            -         DIV C          -           -
```

Conclusion:-

So in this innovative project made using c language we learned to generate a table with randomized subjects