```c
#include<stdio.h>
#include<string.h>
#include<ctype.h>
#include<conio.h>

char kw[32][10] = {"int","float","while","for","char","do","break","auto",
                   "continue","default","double","if","else","enum","union",
                   "goto","long","switch","typedef","unsigned","void","case",
                   "volatile","extern","const","return","sizeof","static",
                   "struct","register","signed" };


char op[15][10] = {"+","/","*","%","-","=",":",",",";","<",">","."};

char identifiers[20][10];
char constants[20][10];
int ic = 0 , cc = 0;                        // 3059 - Jaynil Prajapati
char str[100];
void analyzeString(char str[]);


int main()
{
```

```
┌─[■]══════════════════════════ SOFTWA~1\ASSI_Q~1.C ═══════════════════════════1═[↕]─┐
│int main()                                                                          ▲
│{                                                                                   █
│                                                                                    █
│    FILE *file;                                                                     █
│    char input[500];                                                                █
│    char filename[100];                                                             ▓
│                                                                                    ▓
│                                                                                    ▓
│    clrscr();                                                                       ▓
│    printf("Jaynil Prajapati \n3059 :- A\n\n");                                     ▓
│                                                                                    ▓
│                                                                                    ▓
│    printf("Enter your code:\n");                                                   ▓
│    fgets(input, sizeof(input), stdin);              // 3059 - Jaynil Prajapati     ▓
│                                                                                    ▓
│                                                                                    ▓
│    printf("Enter the filename to save the code: ");                                ▓
│    fgets(filename, sizeof(filename), stdin);                                       ▓
│    strtok(filename, "\n");                                                         ▓
│                                                                                    ▓
│                                                                                    ▓
│    file = fopen(filename, "w");                                                    ▓
│                                                                                    ▓
│                                                                                    ▓
│    if(file == NULL)                                                                ▓
│    {                                                                               ▓
│        printf("Error creating/opening the file.\n");                               ▼
│─ 40:1 ══════════◄▯                                                                ─►│
└────────────────────────────────────────────────────────────────────────────────────┘
```

```
=[■]========================= SOFTWA~1\ASSI_Q~1.C =========================1=[↕]=
    }

    fprintf(file, "%s", input);

    fclose(file);
    file = fopen(filename, "r");

    if(file == NULL)                    // 3059 - Jaynil Prajapati
    {
        printf("Error opening the file for reading.\n");
        return 1;
    }

    while(fgets(str,sizeof(str),file) != NULL)
    {
        analyzeString(str);
    }

    fclose(file);
    getch();
    return 0;
}
```

```
╔═[■]════════════════════ SOFTWA~1\ASSI_Q~1.C ═══════════════════1═[↕]╗
}

void analyzeString(char str[])
{

    char *ptr;
    int i , j ;              // 3059 - Jaynil Prajapati

    ptr = strtok(str," \n\t");

    while(ptr != NULL)
    {
        int flag = 0 ;


        for(i=0;i<32;i++)
        {
            if(strcmp(ptr,kw[i])==0)
            {
                printf("[KW #%d] ",i+1);
                flag = 1;
                break;
            }
        }
```

```
                      SOFTWA~1\ASSI_Q~1.C
      }


      if(flag==0)
      {
          for(j=0;j<10;j++)
          {
              if(ptr[0] == op[j][0])
              {
                  printf("[OP #%d] ",j+1);
                  flag = 1;
                  break;                         // 3059 - Jaynil Prajapati
              }
          }
      }


      if(flag==0)
      {
          if(isalpha(ptr[0]))
          {
              int isRepeated = 0;
              for(i=0;i<ic;i++)
```

```
=[■]========================= SOFTWA~1\ASSI_Q~1.C =========================1=[↕]=
        if(flag==0)
        {
            if(isalpha(ptr[0]))
            {
                int isRepeated = 0;
                for(i=0;i<ic;i++)
                {
                    if(strcmp(ptr,identifiers[i])==0)
                    {
                        printf("[ID #%d] ",i+1);
                        isRepeated = 1;
                        break;
                    }
                }                                    // 3059 - Jaynil Prajapati
                if(!isRepeated)
                {
                    strcpy(identifiers[ic++],ptr);
                    printf("[ID #%d] ",ic);
                }
            }
            else if(isdigit(ptr[0]))
```

```
                    }

            else if(isdigit(ptr[0]))
            {
                int isRepeated = 0;
                for(i=0;i<cc;i++)
                {
                    if(strcmp(ptr,constants[i])==0)
                    {
                        printf("[CO #%d] ",i+1);
                        isRepeated = 1;
                        break;
                    }
                }                              // 3059 - Jaynil Prajapati
            if(!isRepeated)
            {
                strcpy(constants[cc++],ptr);
                printf("[CO #%d] ",cc);
            }
            }
        }
    ptr = strtok(NULL," \n\t");
```

```c
                int isRepeated = 0;
                for(i=0;i<cc;i++)
                {
                    if(strcmp(ptr,constants[i])==0)
                    {
                        printf("[CO #%d] ",i+1);
                        isRepeated = 1;
                        break;
                    }
                }                              // 3059 - Jaynil Prajapati
                if(!isRepeated)
                {
                    strcpy(constants[cc++],ptr);
                    printf("[CO #%d] ",cc);
                }
            }
        ptr = strtok(NULL," \n\t");
    }
}
```

```
Jaynil Prajapati
3059 :- A

Enter your code:
int a,b; a = 5; b = 10; int c = a+b;
Enter the filename to save the code: jaynil.txt
```

Jaynil Prajapati
3059 :- A

Enter your code:
int a,b; a = 5; b = 10; int c = a+b;
Enter the filename to save the code: jaynil.txt
[KW #1] [ID #1] [ID #2] [OP #6] [CO #1] [ID #3] [OP #6] [CO #2] [KW #1] [ID #4]
[OP #6] [ID #5]
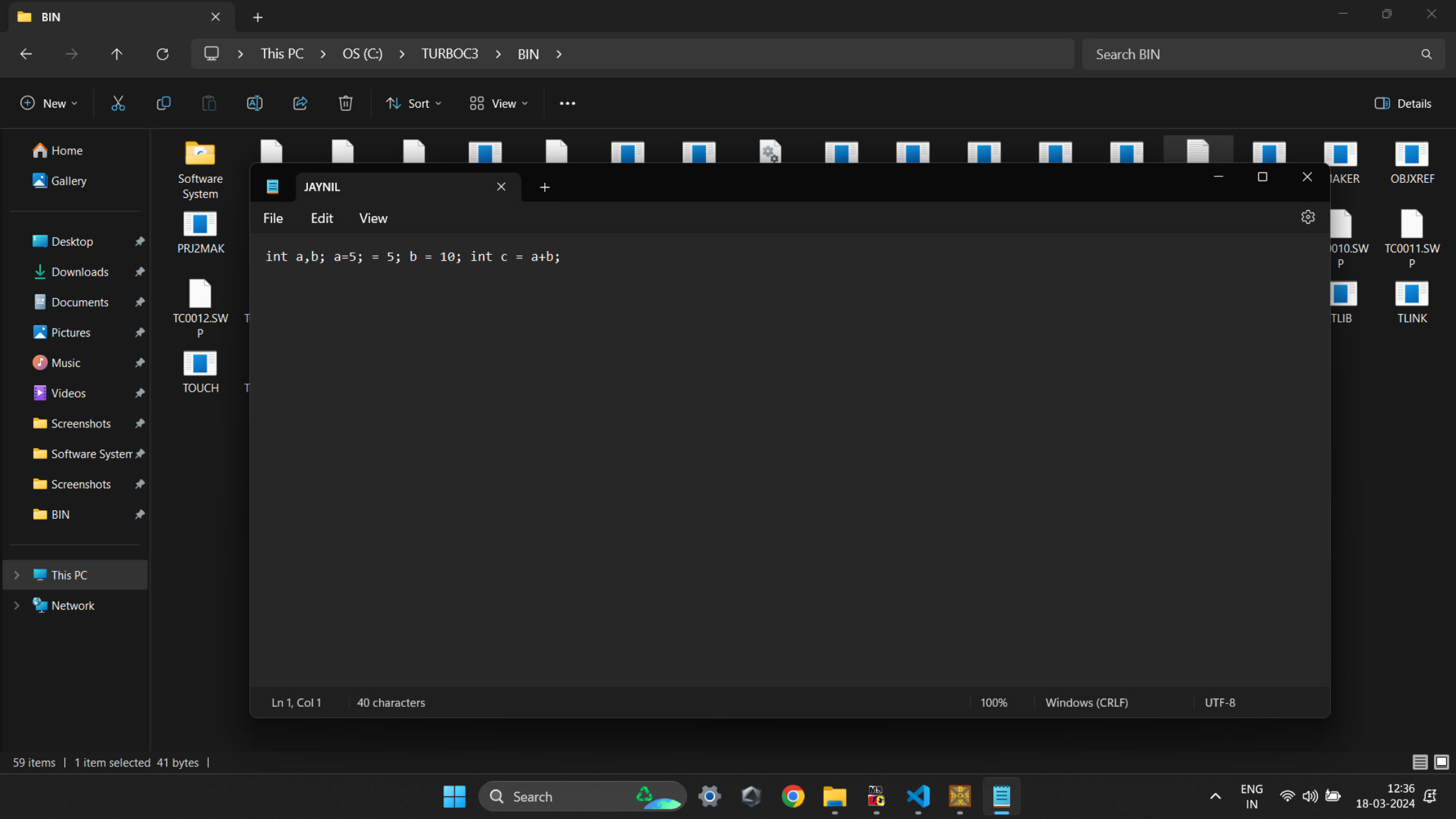
```
int a,b; a=5; = 5; b = 10; int c = a+b;
```

```
=[■]========================== SOFTWA~1\ASSI_Q~2.C ========================1=[↕]=
#include <stdio.h>
#include <string.h>
#include <ctype.h>

char stat_table[6][4][10] = {
    {"stat", "letter", "digit", "."},
    {"start", "id", "int", "error"},
    {"id", "id", "id", "error"},
    {"int", "error", "int", "s"},        // 3059 - Jaynil Prajapati
    {"s", "error", "real", "error"},
    {"real", "error", "real", "error"},
};


int main()
{
    char input[20], column_stat[10],prev_stat[10], current_stat[10], next_stat
    char ch, choice;
    int flag, error, i, c, r, len;
    clrscr();
    printf("Jaynil Prajapati\n3059 :- A\n");
    do
```
=====1:1 ======◄□

═[■]══════════════════════ SOFTWA~1\ASSI_Q~2.C ═══════════════════════1═[↕]═

```c
{
    char input[20], column_stat[10],prev_stat[10], current_stat[10], next_stat
    char ch, choice;
    int flag, error, i, c, r, len;
    clrscr();
    printf("Jaynil Prajapati\n3059 :- A\n");
    do
    {
        printf("Enter identifier: ");
        scanf("%s", &input);

        len = strlen(input);

        strcpy(current_stat, "start");

        flag = 0;                        // 3059 - Jaynil Prajapati
        error = 0;

        for (i = 0; i < len && !error; i++)
        {
            ch = input[i];
```

══ 35:1 ═════════◄□

═[■]═══════════════════════ SOFTWA~1\ASSI_Q~2.C ═══════════════════════1═[↕]═

```c
        if (isalpha(ch))
        {
            strcpy(column_stat, "letter");
        }
        else if (isdigit(ch))
        {
            strcpy(column_stat, "digit");
        }
        else if (ch == '.')
        {
            strcpy(column_stat, "."); // 3059 - Jaynil Prajapati
        }
        else
        {
            strcpy(next_stat, "error");
            error = 1;
            break;
        }

        for (r = 1; r < 6; r++)
```

═ 56:1 ═══◄□

```
            break;
        }


        for (r = 1; r < 6; r++)

        {
            if (strcmp(stat_table[r][0], current_stat) == 0)
            {
                for (c = 1; c < 4; c++)
                {
                    if (strcmp(stat_table[0][c], column_stat) == 0)
                    {
                        strcpy(next_stat, stat_table[r][c]);
                        break;
                    }
                }                       // 3059 - Jaynil Prajapati

            if (strcmp(next_stat, "error") == 0)
            {
                flag = 1;
                error = 1;
```

```
┌─[■]════════════════════════ SOFTWA~1\ASSI_Q~2.C ═══════════════════════1═[↕]┐
                    {
                            flag = 1;
                            error = 1;
                            break;                                    █
                    }


                    if ((i == len - 1) && (strcmp(next_stat, "s") == 0))
                    {
                            flag = 1;
                            break;
                    }               // 3059 - Jaynil Prajapati

                    strcpy(prev_stat,current_stat);
                    strcpy(current_stat, next_stat);
                    break;
                }
            }
        printf("%s\t%c\t%s\n",prev_stat,input[i],current_stat);
        }

        if (flag > 0)
─ 91:1 ═════════◄◘
```

```
                          }
                    }
                printf("%s\t%c\t%s\n",prev_stat,input[i],current_stat);
            }


            if (flag > 0)
            {
                printf("\nInvalid Token");
            }
            else
            {
                printf("\nValid Token");

                if (strcmp(current_stat, "id") == 0)
                {
                    printf("\nIt is an identifier");    // 3059 - Jaynil Prajapati
                }
                else if (strcmp(current_stat, "int") == 0)
                {
                    printf("\nIt is an integer");
                }
```

```
┌─[■]══════════════════════ SOFTWA~1\ASSI_Q~2.C ═════════════════════1═[↕]┐
         if (strcmp(current_stat, "id") == 0)
         {
             printf("\nIt is an identifier");    // 3059 - Jaynil Prajapati
         }
         else if (strcmp(current_stat, "int") == 0)
         {
             printf("\nIt is an integer");
         }
         else if (strcmp(current_stat, "real") == 0)
         {
             printf("\nIt is a real");
         }
     }

     printf("\n\nDo you want to continue? (enter 'y' for yes and 'n' for no
     scanf(" %c", &choice);

 } while (choice != 'n');

 return 0;
}
─ 119:1 ══◄▐──────────────────────────────────────────────────────────►─
```

```
Jaynil Prajapati
3059 :- A
Enter identifier: 1abc
start    1        int
start    a        int

Invalid Token

Do you want to continue? (enter 'y' for yes and 'n' for no): y
Enter identifier: abc
start    a        id
id       b        id
id       c        id

Valid Token
It is an identifier

Do you want to continue? (enter 'y' for yes and 'n' for no):
```

```
=[■]===========================  SOFTWA~1\ASSI_Q~3.C ================2=[↕]=
#include <stdio.h>
#include <conio.h>
#include <string.h>
struct treenode
{
    char info;
    struct treenode *left;
    struct treenode *right;
} *temp, *a, *b, *c, *d, *temp1, *root;
typedef struct treenode node;
node *proc_e(char input[]);
node *proc_t(char input[]);          // 3059 - Jaynil Prajapati
node *proc_v(char input[]);
void traversal(node *temp);
int ssm = 0;
void main()
{
    char input[20];
    ssm = 0;
    clrscr();
```

═[■]══════════════════════════════ SOFTWA~1\ASSI_Q~3.C ══════════════════════2═[↕]═

```
void main()
{

    char input[20];
    ssm = 0;
    clrscr();

    printf("Jaynil Prajapati \n3059 :- A\n\n");
    printf("Enter String:");
    gets(input);
    root = proc_e(input);
    printf("Generated Parser Tree: ");
    traversal(root);
    getch();
}


node *proc_e(char input[])                        // 3059 - Jaynil Prajapati
{

    char ch;
    a = proc_t(input);
    while (input[ssm] == '+' || input[ssm] == '-')
    {
```
└─ ══ 36:1 ═════◄▯
═[■]═══►

```
          ch = input[ssm];
          ssm++;
          b = proc_t(input);
          temp = (node *)malloc(sizeof(node));
          temp->info = ch;
          temp->left = a;
          temp->right = b;
          a = temp;
     }
     return a;
}
node *proc_t(char input[])
{
     char ch;                          // 3059 - Jaynil Prajapati
     c = proc_v(input);
     ssm += 1;
     while (input[ssm] == '*' || input[ssm] == '/')
     {
          ch = input[ssm];
          ssm++;
          d = proc_v(input);
```

```
=[■]===========================SOFTWA~1\ASSI_Q~3.C ================2=[↕]=

        temp = (node *)malloc(sizeof(node));
        temp->info = ch;
        temp->left = c;
        temp->right = d;
        c = temp;
        ssm += 1;
    }
    return c;
}
node *proc_v(char input[])              // 3059 - Jaynil Prajapati
{
    if (isalpha(input[ssm]))
    {
        temp = (node *)malloc(sizeof(node));
        temp->info = input[ssm];
        temp->left = NULL;
        temp->right = NULL;
        return temp;
    }
    else
```

=== 78:1 ===◄▯

```
═[■]══════════════════════════ SOFTWA~1\ASSI_Q~3.C ═══════════════════════2═[↕]═
        temp->info = input[ssm];
        temp->left = NULL;
        temp->right = NULL;
        return temp;
    }
    else
    {
        printf("Error %c", input[ssm]);
        exit(0);
    }
}
void traversal(node *temp1)              // 3059 - Jaynil Prajapati
{

    if (temp1 != NULL)
    {
        traversal(temp1->left);
        printf("%c", temp1->info);
        traversal(temp1->right);
    }
}
    ═══ 93:1 ═══◄□
```

Jaynil Prajapati
3059 :- A

Enter String:a+b-c
Generated Parser Tree: a+b-c

Jaynil Prajapati
3059 :- A

Enter String:a+b+c*d=f
Generated Parser Tree: a+b+c*d_