10. Write a C program to construct recursive descent parsing.

```
#include <stdio.h>
#include <string.h>
#define SUCCESS 1
#define FAILED 0
int E(), Edash(), T(), Tdash(), F();
const char *cursor;
char string[64];
int main()
{
   puts("Enter the string");
   // scanf("%s", string);
   sscanf("i+(i+i)*i", "%s", string);
   cursor = string;
   puts("");
   puts("Input      Action");
   puts("--------------------------------");
   if (E() && *cursor == '\0') {
      puts("--------------------------------");
      puts("String is successfully parsed");
      return 0;
   } else {
      puts("--------------------------------");
      puts("Error in parsing String");
      return 1;
   }
}
int E()
{
   printf("%-16s E -> T E'\n", cursor);
   if (T()) {
      if (Edash())
         return SUCCESS;
      else
         return FAILED;
   } else
      return FAILED;
}
int Edash()
{
   if (*cursor == '+') {
      printf("%-16s E' -> + T E'\n", cursor);
      cursor++;
      if (T())
      {
         if (Edash())
            return SUCCESS;
         else
            return FAILED;
```

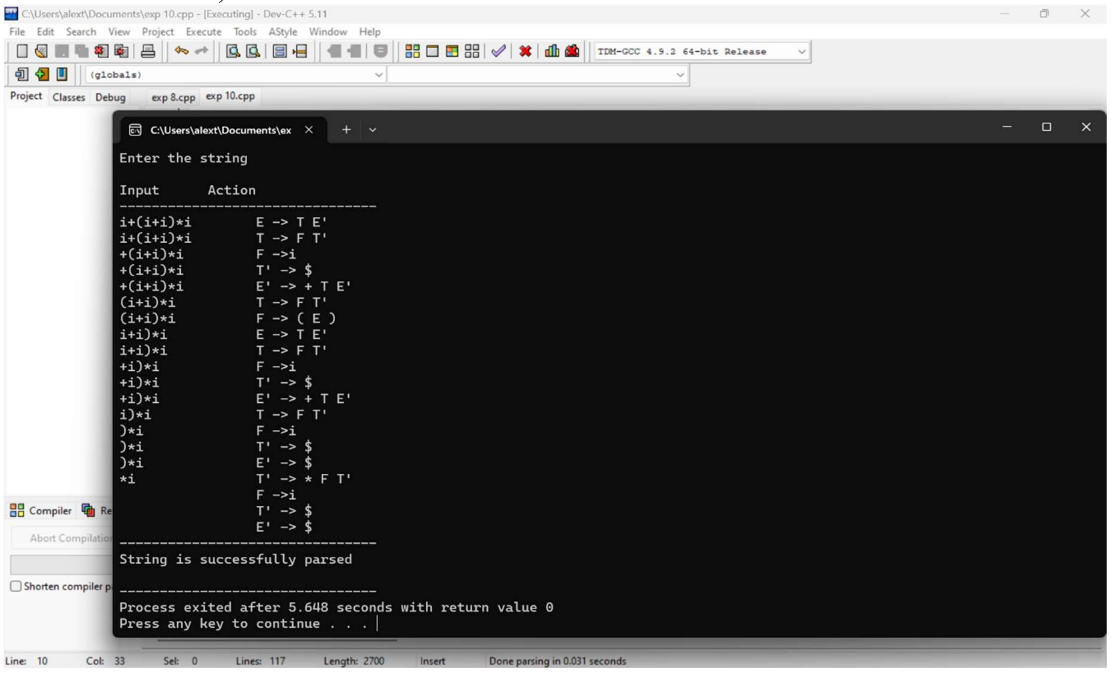
```
        }
      else
            return FAILED;
    }
  else
    {
        printf("%-16s E' -> $\n", cursor);
        return SUCCESS;
    }
}

int T()
{
    printf("%-16s T -> F T'\n", cursor);
    if (F())
    {
        if (Tdash())
            return SUCCESS;
        else
            return FAILED;
    } else
        return FAILED;
}

int Tdash()
{
    if (*cursor == '*')
    {
        printf("%-16s T' -> * F T'\n", cursor);
        cursor++;
        if (F())
        {
            if (Tdash())
                return SUCCESS;
            else
                return FAILED;
        } else
            return FAILED;
    }
  else
    {
        printf("%-16s T' -> $\n", cursor);
        return SUCCESS;
    }
}

int F()
{
    if (*cursor == '(')
    {
```

```
    printf("%-16s F -> ( E )\n", cursor);
    cursor++;
    if (E())
    {
      if (*cursor == ')')
      {
        cursor++;
        return SUCCESS;
      } else
        return FAILED;
    } else
      return FAILED;
  } else if (*cursor == 'i')
  {
    cursor++;
    printf("%-16s F ->i\n", cursor);
    return SUCCESS;
  } else
    return FAILED;
```



```
Enter the string

Input      Action
--------------------------------
i+(i+i)*i        E -> T E'
i+(i+i)*i        T -> F T'
+(i+i)*i         F ->i
+(i+i)*i         T' -> $
+(i+i)*i         E' -> + T E'
(i+i)*i          T -> F T'
(i+i)*i          F -> ( E )
i+i)*i           E -> T E'
i+i)*i           T -> F T'
+i)*i            F ->i
+i)*i            T' -> $
+i)*i            E' -> + T E'
i)*i             T -> F T'
)*i              F ->i
)*i              T' -> $
)*i              E' -> $
*i               T' -> * F T'
                 F ->i
                 T' -> $
                 E' -> $
--------------------------------
String is successfully parsed

--------------------------------
Process exited after 5.648 seconds with return value 0
Press any key to continue . . .
```

```
}
```