

**Ahsanullah University of Science & Technology**

**Department of Computer Science & Engineering**

**Course No : CSE4130**

**Course Title : Formal Languages and Compilers Lab**

**Assignment No : 02**

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**Submitted To : Mr. Aminur Rahman & Mr. Al Hasib Mahamud**

**Submitted By-**

**Group : A2**

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**Section : A**

**Code:**

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| --- | --- |
| **#include<stdio.h>**  **#include<string.h>**  **int sep(char lexeme)**  **{**  **if(lexeme == '\'' || lexeme== ',' || lexeme == ';' || lexeme == '\"')**  **{**  **return 1;**  **}**  **return 0;**  **}**  **int par(char lexeme)**  **{**  **if(lexeme == '(' || lexeme == ')')**  **{**  **return 1;**  **}**  **return 0;**  **}**  **int keyword(char lexeme[])**  **{**  **FILE \*kw;**  **kw = fopen("Keyword.txt","r");**  **char c,kwstr[100];**  **int i=0,result=0;**  **while((c = getc(kw))!=EOF)**  **{**  **if(!isspace(c))**  **{**  **kwstr[i] = c;**  **i++;**  **}**  **else**  **{**  **for(int j=0; j<strlen(kwstr); j++)**  **{**  **if(kwstr[j]!=lexeme[j])**  **{**  **result = 0;**  **break;**  **}**  **result = 1;**  **}**  **i = 0;**  **if(result==1)**  **{**  **return result;**  **}**  **memset(kwstr,0,strlen(kwstr));**  **}**  **}**  **fclose(kw);**  **return result;**  **}** | **int op(char lexeme[])**  **{**  **FILE \*op;**  **op = fopen("Operator.txt","r");**  **char c,opstr[100];**  **int i=0,result=0;**  **while((c = getc(op))!=EOF)**  **{**  **if(!isspace(c))**  **{**  **opstr[i] = c;**  **i++;**  **}**  **else**  **{**  **for(int j=0; j<strlen(opstr); j++)**  **{**  **if(opstr[j]!=lexeme[j])**  **{**  **result = 0;**  **break;**  **}**  **result = 1;**  **}**  **i = 0;**  **if(result==1)**  **{**  **return result;**  **}**  **memset(opstr,0,strlen(opstr));**  **}**  **}**  **fclose(op);**  **return result;**  **}**  **int identifier(char lexeme[])**  **{**  **int i = 0;**  **int l=0;**  **int s=0;**  **if(isalpha(lexeme[i]) || (lexeme[i]=='\_'))**  **{**  **s=1;**  **i++;**  **}else**  **s=0;**  **l=strlen(lexeme);**  **if(s)**  **{**  **for(;i<l;i++)**  **{**  **if(isalpha(lexeme[i]) || (lexeme[i]=='\_') || isdigit(lexeme[i]))**  **{**  **s=1;**  **}**  **else**  **{**  **s=0;**  **break;**  **}**  **}**  **}**  **return s;**  **}** |
| **int num(char lexeme[])**  **{**  **int i = 0;**  **int l=0;**  **int s=0;**  **if(isdigit(lexeme[i]))**  **{**  **s=1;**  **i++;**  **}**  **else if(lexeme[i]=='.')**  **{**  **s=2;**  **i++;**  **}**  **else s=0;**  **l=strlen(lexeme);**  **if(s==1)**  **for( ; i<l; i++)**  **{**  **if(isdigit(lexeme[i]))**  **s=1;**  **else if(lexeme[i]=='.')**  **{**  **s=2;**  **i++;**  **break;**  **}**  **else**  **{**  **s=0;**  **break;**  **}**  **}**  **if(s==2)**  **if(isdigit(lexeme[i]))**  **{**  **s=3;**  **i++;**  **}**  **else**  **s=0;**  **if(s==3)**  **for(; i<l; i++)**  **{**  **if(isdigit(lexeme[i]))**  **s=3;**  **else**  **{**  **s=0;**  **break;**  **}**  **}**  **if(s==3) s=1;**  **return s;**  **}** | **int main()**  **{**  **FILE \*ptr1,\*ptr2;**  **ptr1 = fopen("Input.txt","r");**  **ptr2= fopen("Output.txt","w");**  **int i=1;**  **char c,temp;**  **printf("Input:\n");**  **while((c=getc(ptr1))!=EOF)**  **{**  **printf("%c",c);**  **if(c == '<' || c == '>' || c == '!' || c == '=')**  **{**  **temp = c;**  **c=getc(ptr1);**  **printf("%c",c);**  **if(c == '=')**  **{**  **fprintf(ptr2," %c%c ",temp,c);**  **}**  **else if( c == '\'')**  **{**  **fprintf(ptr2," %c %c ",temp,c);**  **}**  **else**  **{**  **fprintf(ptr2," %c %c",temp,c);**  **}**  **}**  **else if(c == ',' || c == ';' || c == '+' || c == '-' || c == '/' || c == '\*' || c == '(' || c == '"' || c == ')' || c == '\'')**  **{**  **fprintf(ptr2," %c ",c);**  **}**  **else**  **fputc(c,ptr2);**  **}**  **fclose(ptr1);**  **fclose(ptr2);**  **ptr2= fopen("Output.txt","r");**  **printf("\nOutput Step 1:\n");**  **while((c=getc(ptr2))!=EOF)**  **{**  **printf("%c",c);**  **}**  **fclose(ptr2);** |
| **ptr2= fopen("Output.txt","r");**  **ptr1 = fopen("Output2.txt","w");**  **char lex[100];**  **char unknown[100];**  **int ln;**  **i=0;**  **int sp = 0,ucheck = 0;**  **while((c=fgetc(ptr2))!=EOF)**  **{**  **if(!isspace(c))**  **{**  **lex[i]=c;**  **i++;**  **sp=0;**  **}**  **else if(sp != 1)**  **{**  **sp = 1;**  **fputc('[',ptr1);**  **if(keyword(lex) == 1)**  **{**  **fprintf(ptr1,"kw %s",lex);**  **}**  **else if(sep(lex[0]) == 1)**  **{**  **fprintf(ptr1,"sep %s",lex);**  **}**  **else if(identifier(lex) == 1)**  **{**  **fprintf(ptr1,"id %s",lex);**  **}**  **else if(num(lex) == 1)**  **{**  **fprintf(ptr1,"num %s",lex);**  **}**  **else if(op(lex) == 1)**  **{**  **fprintf(ptr1,"op %s",lex);**  **}** | **else if(par(lex[0]) == 1)**  **{**  **fprintf(ptr1,"par %s",lex);**  **}**  **else**  **{**  **fprintf(ptr1,"unkn %s",lex);**  **ucheck = 1;**  **ln=strlen(lex);**  **for(int i=0;i<ln;i++){**  **unknown[i]=lex[i];**  **}**  **}**  **fprintf(ptr1,"] ");**  **i = 0;**  **memset(lex,0,strlen(lex));**  **}**  **}**  **fclose(ptr2);**  **fclose(ptr1);**  **ptr2= fopen("Output2.txt","r");**  **printf("\nOutput 2:\n");**  **while((c=getc(ptr2))!=EOF)**  **{**  **printf("%c",c);**  **}**  **fclose(ptr2);**  **if(ucheck)**  **printf("\n\nUnknown lexeme detected which is ");**  **for(int i=0;i<ln;i++){**  **printf("%c",unknown[i]);**  **}**  **return 0;**  **}** |

**Submitted By :190104027**