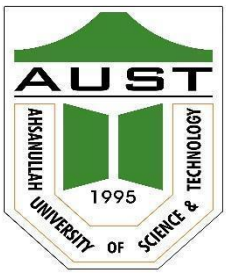

Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

Course No : **CSE4130**
Course Title : **Formal Languages and Compilers Lab**
Assignment No : **02**

Date of Performance : **29/11/22**
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Submitted To : **Mr. Aminur Rahman & Mr. Al Hasib Mahamud**

Submitted By-
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Section : **A**

Code:

```
#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));
    }
```

```
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]))
```

```
    }
    fclose(kw);
    return result;
}
```

```
        {
            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)
```

```
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");
```

```
    for(; i<l; i++)
    {
      if(isdigit(lexeme[i]))
        s=3;
      else
      {
        s=0;
        break;
      }
    }
  if(s==3) s=1;
  return s;
}
```

```
  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