ASSIGNMENT 9 – 62070501064

Test Case 1 - ทดสอบการแบ่งคำ " 1+2.3(7^8)sin + sin_e-2x+x2*2!/_x1 sine "

มีข้อมูล 20 ตัว

```
Enter input: 1+2.3(7^8)sin + sin_e-2x+x2*2!/_x1 sine
**************************************************
Input: 1+2.3(7^8)sin + sin_e-2x+x2*2!/_x1 sine
To Lower: 1+2.3(7^8)sin + sin_e-2x+x2*2!/_x1 sine
Add Space: 1 + 2.3 ( 7 ^ 8 ) sin  +  sin_e - 2x + x2 * 2! / _x1 sine

------Analyse------
NUMBER     : 1
OPERATOR   : +
NUMBER     : 2.3
OPERATOR   : (
NUMBER     : 7
OPERATOR   : ^
NUMBER     : 8
OPERATOR   : )
FUNCTION   : sin-
OPERATOR   : +
IDENTIFIER : sin_e
OPERATOR   : -
ERROR      : 2x
OPERATOR   : +
IDENTIFIER : x2
OPERATOR   : *
ERROR      : 2!
OPERATOR   : /
IDENTIFIER : _x1
IDENTIFIER : sine

 === RESULT ===
NUMBER     : 4
OPERATOR   : 9
FUNCTION   : 1
IDENTIFIER : 4
ERROR      : 2
TOTAL      : 20
**************************************************
```

Test Case 2 - ทดสอบฟังก์ชัน_ "SIN(cos(Tan(aSin(Acos(Atan) SQRT) log)exP)pow)" //พิมพ์ติดกัน มี 20 ตัว มี function 10 ตัว

```
Enter input: SIN(cos(Tan(aSin(Acos(Atan) SQRT) log)exP)pow)
**************************************************
Input: SIN(cos(Tan(aSin(Acos(Atan) SQRT) log)exP)pow)
To Lower: sin(cos(tan(asin(acos(atan) sqrt) log)exp)pow)
Add Space: sin ( cos ( tan ( asin ( acos ( atan )  sqrt )  log ) exp ) pow )

------Analyse------
FUNCTION   : sin
OPERATOR   : (
FUNCTION   : cos
OPERATOR   : (
FUNCTION   : tan
OPERATOR   : (
FUNCTION   : asin
OPERATOR   : (
FUNCTION   : acos
OPERATOR   : (
FUNCTION   : atan
OPERATOR   : )
FUNCTION   : sqrt
OPERATOR   : )
FUNCTION   : log
OPERATOR   : )
FUNCTION   : exp
OPERATOR   : )
FUNCTION   : pow
OPERATOR   : )

 === RESULT ===
NUMBER     : 0
OPERATOR   : 10
FUNCTION   : 10
IDENTIFIER : 0
ERROR      : 0
TOTAL      : 20
**************************************************
```

Test Case 3 - ทดสอบ "+-*/^()2 3 .5 exit end 2$ 1A A1 sin2 2sin a@b 1.1. 1.1.1 "

มี 20 ตัว Identifier 4 ตัว : exit, end, A1, Sin2

Error 6 ตัว : 2$ 1A 2sin a@b 1.1. 1.1.1

```
Enter input: +-*/^()2 3 .5 exit end 2$ 1A A1 sin2 2sin a@b 1.1. 1.1.1
**************************************************
Input: +-*/^()2 3 .5 exit end 2$ 1A A1 sin2 2sin a@b 1.1. 1.1.1
To Lower: +-*/^()2 3 .5 exit end 2$ 1a a1 sin2 2sin a@b 1.1. 1.1.1
Add Space:  +  -  *  /  ^  (  ) 2 3 .5 exit end 2$ 1a a1 sin2 2sin a@b 1.1. 1.1.1

------Analyse------
OPERATOR   : +
OPERATOR   : -
OPERATOR   : *
OPERATOR   : /
OPERATOR   : ^
OPERATOR   : (
OPERATOR   : )
NUMBER     : 2
NUMBER     : 3
NUMBER     : .5
IDENTIFIER : exit
IDENTIFIER : end
ERROR      : 2$
ERROR      : 1a
IDENTIFIER : a1
IDENTIFIER : sin2
ERROR      : 2sin
ERROR      : a@b
ERROR      : 1.1.
ERROR      : 1.1.1

 === RESULT ===
NUMBER     : 3
OPERATOR   : 7
FUNCTION   : 0
IDENTIFIER : 4
ERROR      : 6
TOTAL      : 20
**************************************************
```

Test Case 4 - ทดสอบการจบโปรแกรม "end exit" // มี 2 ตัว ยังไม่จบ

```
Enter input: end exit
**************************************************
Input: end exit
To Lower: end exit
Add Space: end exit

------Analyse------
IDENTIFIER : end
IDENTIFIER : exit

 === RESULT ===
NUMBER     : 0
OPERATOR   : 0
FUNCTION   : 0
IDENTIFIER : 2
ERROR      : 0
TOTAL      : 2
**************************************************
```

Test Case 5 - ทดสอบการจบโปรแกรม " end " // จบโปรแกรม

```
Enter input: end

 END PROGRAM

--------------------------------
Process exited after 107.6 seconds with return value 0
Press any key to continue . . .
```

Comment Source Code

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

int fn(char *s);
int number(char *s);
int numberFormat(char *s);
int ope(char *s);
int identifier(char *s);
void addSpace(char *s);
void spaceSep(char *s, char data[][50]);
void toLower(char *s);
void deletespaceAtcorner(char *s);
//declare the function

int fn(char *s){ //function to check if input be the function
    char func[10][10] = {"sin","cos","tan","asin","acos","atan","sqrt","log","exp","pow"};
    int i;
    //declare tha variant and name of function
    for(i=0;i<20;i++){ //loop that give i = 0 if i<20 then i+1
        if(strcmp(s, func[i])==0){ //compare string if it is same with declared function
            return 1; // if it is same then return 1
        }
    }
    return 0;
}

int number(char *s){ //function to check if input be number
    double num;
    int i;
    //declare the variant
    for( i=0; i<strlen(s); i++){ //loop that give i=0 if i < length of string then i+1
        if(isdigit(s[i]) == 0 && s[i] != '.'){ // check that if string is not number or .
            return 0; //then return 0
        }
    }
    return numberFormat(s);
//return result to fuction numberFormat to check sort of number if that correct in format of number
}

int numberFormat(char *s){ //function to check format of number
    int dot = 0, i=0; //declare the variant
    for(i=0; i< strlen(s); i++){ //loop thate give i=0 if i < length of string then i+1
        if(s[i]== '.'){ //check if string at location i be '.'
            dot++; //then dot +1
        }
    }
    if(dot<2){ //check if has '.' < 2
        return 1; // then return 1
    }else{ //if '.' >= 2
        return 0; // then return 0 (wrong format)
    }
}

int ope(char *s){ //function to check string if it is operator
    int i; //declare the variant
    for(i=0; i<strlen(s); i++){ // loop that give i=0 if i< length of string then i+1
        if(strchr("+-*/^()",s[i])!= NULL){
            //check that if string at location i is same with one of operator
            return 1; // then return 1
        }
    }
    return 0; // return 0 show that is not operator
}

int identifier(char *s){ //function to check if input is correct in c++ form
    if(!isalpha(s[0]) && s[0] != '_'){
    //check if input at location 0 is not character and _ then wrong in c++ form
        return 0; // then return 0
    }else{
        int i; //declare variant
        for(i=1; i<strlen(s); i++){ //loop that give i=1 if i < length of string then i+1
            if(!isalpha(s[i]) && s[i] != '_' && isdigit(s[i]) == 0){
                //check that if other location is not character or _ or number
                return 0; //then return 0
            }
        }
    }
    return 1; //if not be like addition show that string is correct in c++ form then return 1
}
```

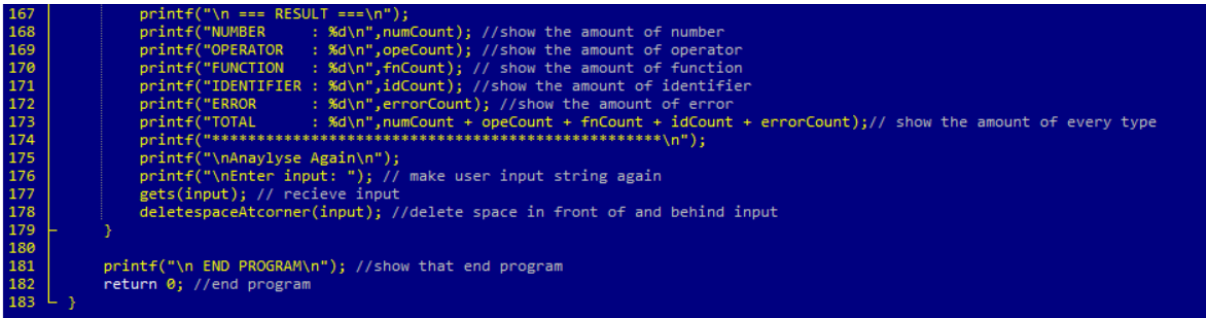
```c
void addSpace(char *s){ //function to add space between operator in every location
    int i,j;
    char tem[200] = "", old[200] = "";
    //declare the variant
    for( i=0,j=strlen(s);i < j ;i++){ //loop that i=0 and j is length of string and if i<j then i+1
        if(strchr(",+-*/^()",s[i]) != NULL){ //check if there is operator
            sprintf(tem, "%s %c ", old, s[i]); // then add space between operator and save in tem
        }else{ //if it is not
            sprintf(tem, "%s%c", old, s[i]); // then do not add space and save in tem
        }
        strcpy(old, tem); //copy tem and save in old to put in front of next strinf
    }
    strcpy(s, tem); //after all, copy tem to save in original string
}

void spaceSep(char *s, char data[][50]){ //function to seperate string and put in array
    char * word;
    int count = 0;
    //declare the variant
    word = strtok(s, " "); // seperate string between space and save in word
    while(word != NULL){ //loop while word is not space
        strcpy(data[count++],word); //copy word and save in data at location count then count+1
        word = strtok(NULL, " "); //seperate the space and save in word
    }
    data[count][0] = '\0'; //after end the searching then close the array
}

void toLower(char *s){ //function to change string to lower character
    int i; //declare the variant
    for(i=0; s[i]; i++){ //loop to run in every string
        s[i] = tolower(s[i]); //change string to lower character
    }
}

void deletespaceAtcorner(char *s){ //function to delete space in front of and behind input
    char input[100]; //declare the variant
    while(s[strlen(s)-1] == ' '){ //loop while string at last location is space
        input[strlen(s)-1] = '\0'; //then make string end at last character
    }
    while(s[0] == ' '){ // loop while string at first location is space
        strcpy(s, s+1);  // then make that location be the first character not be space
    }
}
```

```c
int main(){
    char input[100], tem[100];
    int i;
    //declare the variant
    printf("\nEnter input: "); // make user input string
    gets(input); //recieve the input
    deletespaceAtcorner(input); //delete space in front of and behind input
    while(strcmp(input, "exit")!=0 &&strcmp(input, "end")!=0){
    //while input is not "exit" and "end"
        char tem[100], data[100][50];
        int errorCount = 0, fnCount =0, opeCount = 0, idCount = 0, numCount = 0;
        //declare the variant
        printf("************************************************\n");
        printf("Input: %s\n",input); //show the input
        strcpy(tem, input); //copy input and save in tem
        toLower(tem); // send to function toLower to make input to lower character
        printf("To Lower: %s\n",tem); //show the result of toLower function
        addSpace(tem); //send to function addSpace to space between operator
        printf("Add Space: %s\n",tem); //show the result od addSpace function
        spaceSep(tem,data); //send to function spaceSep to seperate word between space and save data n+in tem
        printf("\n------Analyse------\n");
        for(i=0; i< sizeof(data) && strcmp(data[i],"")!=0;i++){
        //loop in size of data if data is not space then analyse in these function
            if(fn(data[i])){ //if string is function
                printf("FUNCTION   : %s\n",data[i]); //show that is function
                fnCount++; //count the function
            }else if(number(data[i])){ //check if it is number
                printf("NUMBER     : %s\n",data[i]); //show that is number
                numCount++; //count the number
            }else if(ope(data[i])){ //check if it is operator
                printf("OPERATOR   : %s\n",data[i]); //show that is operator
                opeCount++; //count the operator
            }else if(identifier(data[i])){ //check if it is identifier
                printf("IDENTIFIER : %s\n",data[i]); //show that is identifier
                idCount++;  //count the identifier
            }else{ //if it is not type of data before
                printf("ERROR      : %s\n",data[i]); //show that is error
                errorCount++; //count the error
            }
        }
```



```
167         printf("\n === RESULT ===\n");
168         printf("NUMBER     : %d\n",numCount); //show the amount of number
169         printf("OPERATOR   : %d\n",opeCount); //show the amount of operator
170         printf("FUNCTION   : %d\n",fnCount); // show the amount of function
171         printf("IDENTIFIER : %d\n",idCount); //show the amount of identifier
172         printf("ERROR      : %d\n",errorCount); //show the amount of error
173         printf("TOTAL      : %d\n",numCount + opeCount + fnCount + idCount + errorCount);// show the amount of every type
174         printf("*********************************************\n");
175         printf("\nAnaylyse Again\n");
176         printf("\nEnter input: "); // make user input string again
177         gets(input); // recieve input
178         deletespaceAtcorner(input); //delete space in front of and behind input
179     }
180
181     printf("\n END PROGRAM\n"); //show that end program
182     return 0; //end program
183 }
```

ปัญหาที่พบในการ Assignment

- ยังไม่ได้ import ภาษาไทยใน Dev C++
- เว้นวรรคผิดทำให้ผลลัพธ์ออกมาไม่ตรงกับโจทย์
- เรียงการประกาศฟังก์ชันผิด ทำให้รันค่าไม่ได้
- ตอนแรกไม่ได้สร้างฟังก์ชันที่ลบ space หน้าและหลัง ทำให้ค่าออกมาไม่ตรงกับโจทย์
- ไม่ค่อยเข้าใจเรื่อง string จึงต้องศึกษาเพิ่มและให้เพื่อน/รุ่นพี่สอน

Self-Assessment : 3 เข้าใจแต่มีปัญหาบางช่วงยังต้องขอความช่วยเหลือ