# Compiler design assignment submission

(15UCSL501)

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QUESTION: convert given algorithm to c program

LANGUAGE USED:PYTHON

basic functions like split,remove,append

basic data types like list,dictionary

basic loopings

BASIC FLOW:

1]algorithms are written in a file

2]single line is read each time.

3]each line is splitted with delimiter as white space and put in a list.

4]unwanted words such as ‘the’,’The’ are removed bys using string.remove().

5]each word is checked from the line and compared weather it exists in the dictionary.

6]if it exists the it is diverted to a particular function loop.

7]i.e if it recognizes enter two numbers its broken into enter ,two,number

Based on this its diverted to a specific function

8]on recognizing end,exit it terminates

PROGRAM:

  #python program to convert given algorithm to c-program

print('start')

    #creating a file to print c program

f=open("program.c","w")

f2=open("input.txt","r")

    #taking algorithm as input

print('enter the algorithm')

l=[]

d={ 'zero':0,

    '0':'0',

    'one':1,

    'two':2,

    'three':3,

    'four':4,

    'five':5,

    'six':6,

    'seven':7,

    'eight':8,

    'nine':9,

    'ten':10,

    'them':2,

    'ab':2,

    'abc':3,

    'abcd':4,

    'result':101,

    '1':1,

    '2':2,

    '3':3,

    '4':4,

    '5':5,

    '6':6,

    '':1,

    '7':7,

    '8':8,

    '9':9,

    '10':10,

    '':0}

opr={'add':'+',

    'sum':'+',

    'addition':'+',

    'sub':'-',

    'subtraction':'-',

    'difference':'-',

    'sub':'-',

    'product':'\*',

    'mul':'\*',

    'multiply':'\*',

   'div':'div',

   'divide':'div',

   'exit':'exit',

   'exit\n':'exit',

   'end':'exit',

   'end\n':'end',

   'stop':'exit',

   'print':'1',

   'display':'1',

   'result':'3',

   'result\n':'3',

   'r':'3',

   'scan':'2',

   'enter':'2',

   'int':'11',

   'int\n':'11',

   'integer':'11',

   'integer\n':'11',

   'i':'11',

   'num':'11',

   'num\n':'11',

   'numbers':'11',

   'numbers\n':'11',

   'real number':'12',

   'real number\n':'12',

   'real':'12',

   'real\n':'12',

   'float':'12',

   'float\n':'12',

   'declare':'4',

   'initialize':'4',

   'comp':'5',

   'compare':'5'

   }

variable\_list=["a","b","c","d","e","f","g","h","i","j","k","l","m","n","o","p","q","r","s","t","u","v","w","x","y","z"]

variable\_list2=["a2","b2","c2","d2","e2","f2","g2","h2","i2","j2","k2","l2","m2","n2",

"o2","p2","q2","r2","s2","t2","u2","v2","w2","x2","y2","z2"]

count1=0

print('#include<stdio.h>\n#include<math.h>\nmain()\n{\n',file=f)

print('int result;\nint i;',file=f)

che=1

num\_s=0

num\_t=0

num3=0

num\_f=0

count\_i=0

count\_f=0

c='abcd'

while c :

    #c=input('')

    c=f2.readline()

    c=c+' num'

    l2=[]

    l2.append(c.split(' '))

    l3=l2[0]

    for x in range(len(l3)):

        if l3[x-1] == 'the':

            l3.remove('the')

        if l3[x-1] == 'The':

            l3.remove('The')

    l2[0]=l3

    operation=opr[l2[0][0]]

    #num3=int(d[l2[0][1]])

    if operation == '+':

        num3=int(d[l2[0][1]])

        print('result= ',end='',file=f)

        for x in range(num3):

            print(variable\_list[x],end='',file=f)

            if x < num3-1:

                print('+',end='',file=f)

        print(';',file=f)

    if operation == '-':

        num3=int(d[l2[0][1]])

        print('result= ',end='',file=f)

        for x in range(num3):

            print(variable\_list[x],end='',file=f)

            if x < num3-1:

                print('-',end='',file=f)

        print(';',file=f)

    if operation == '\*':

        num3=int(d[l2[0][1]])

        print('result= ',end='',file=f)

        for x in range(num3):

            print(variable\_list[x],end='',file=f)

            if x < num3-1:

                print('\*',end='',file=f)

        print(';',file=f)

    if operation == 'div':

        num3=int(d[l2[0][1]])

        print('result= ',end='',file=f)

        for x in range(num3):

            print(variable\_list[x],end='',file=f)

            if x < num3-1:

                print('/',end='',file=f)

        print(';',file=f)

    if operation == 'exit':

        break

        #printing part

    if operation == '1':

        num3=int(d[l2[0][1]])

        if num3 == 101:

            print('printf("%d",result);',file=f)

        else:

            print('printf("',end='',file=f)

            for x in range(num3):

                print('%d',end='',file=f)

            print('",',end='',file=f)

            count2=1

            for x in range(num3):

                print(variable\_list[x],end='',file=f)

                if(x<num2-1):

                    print(',',end='',file=f)

            print(');',file=f)

        #scanning part

    if operation == '2':

        num3=int(d[l2[0][1]])

        num\_t=num3

        if num3 <= 5 :

            type=opr[l2[0][2]]

            print('printf("enter ',end='',file=f)

            print(num3,end='',file=f)

            print(' numbers',end='',file=f)

            #print(l2[0][2],end='',file=f)

            print('");',file=f)

            if type == '11':

                if num3>num\_s:

                    print('int ',end='',file=f)

                    for x in range(num\_s,num3):

                        print(variable\_list[x],end='',file=f)

                        if x < num3-1:

                            print(',',end='',file=f)

                    print(';',file=f)

                num\_s=num3

                print('scanf("',end='',file=f)

                for x in range(num3):

                    print('%d',end='',file=f)

                print('",',end='',file=f)

                count2=1

                for x in range(num3):

                    print("&",end='',file=f)

                    print(variable\_list[x],end='',file=f)

                    if(x<num3-1):

                        print(',',end='',file=f)

                print(');',file=f)

            if type == '12':

                if num3>num\_f:

                    print('float ',end='',file=f)

                    for x in range(num\_f,num3):

                        print(variable\_list2[x],end='',file=f)

                        if x < num3-1:

                            print(',',end='',file=f)

                    print(';',file=f)

                num\_f=num3

                print('scanf("',end='',file=f)

                for x in range(num3):

                    print('%f',end='',file=f)

                print('",',end='',file=f)

                count2=1

                for x in range(num3):

                    print("&",end='',file=f)

                    print(variable\_list2[x],end='',file=f)

                    if(x<num3-1):

                        print(',',end='',file=f)

                print(');',file=f)

        if num3 > 5:

            type=opr[l2[0][2]]

            print('printf("enter ',end='',file=f)

            print(num3,end='',file=f)

            print(' numbers',end='',file=f)

            #print(l2[0][2],end='',file=f)

            print('");',file=f)

            if type == '11':

                if count\_i == 0:

                    print('int a\_int[20];',file=f)

                    count\_i=count\_i+1

                print('for(i=0;i<',end='',file=f)

                print(num3,end='',file=f)

                print(';i++)\n{\n scanf("%d",&a\_int[i];\n}\n',end='',file=f)

            if type == '12':

                if count\_f == 0:

                    print('float a\_float[20];',file=f)

                    count\_f=count\_f+1

                print('for(i=0;i<',end='',file=f)

                print(num3,end='',file=f)

                print(';i++)\n{\n scanf("%f",&a\_float[i];\n}\n',end='',file=f)

    if operation =='3' :

        print('printf("result is %d",result);',file=f)

print('return;',file=f)

print('}',file=f)

Input data(all the test cases are cover in a single input):

enter 2 num

add 2 num

result

enter 2 real

div 2 int

result

enter 3 num

enter 3 real

enter 8 num

enter 8 float

add 2 num

div 3 num

result

exit

output of the program:

#include<stdio.h>

#include<math.h>

main()

{

int result;

int i;

printf("enter 2 numbers");

int a,b;

scanf("%d%d",&a,&b);

result= a+b;

printf("result is %d",result);

printf("enter 2 numbers");

float a2,b2;

scanf("%f%f",&a2,&b2);

result= a/b;

printf("result is %d",result);

printf("enter 3 numbers");

int c;

scanf("%d%d%d",&a,&b,&c);

printf("enter 3 numbers");

float c2;

scanf("%f%f%f",&a2,&b2,&c2);

printf("enter 8 numbers");

int a\_int[20];

for(i=0;i<8;i++)

{

scanf("%d",&a\_int[i];

}

printf("enter 8 numbers");

float a\_float[20];

for(i=0;i<8;i++)

{

scanf("%f",&a\_float[i];

}

result= a+b;

result= a/b/c;

printf("result is %d",result);

return;

}