SP Assignment 4

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Name: Yash Oswal

Div: B Roll no: 38

SRN: 201901226

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Input file:

MACRO

CLEARMEM &X, &N, &REG=AREG

MOVER &REG, ='0'

MOVEM &REG, &X + &N

MEND

MACRO

ADD3NUM &A, &B, &C

ADD &A, &B

MOVEM &A, AREG

ADD &A, &C

MEND

MACRO

INCR &MEM, &REG2, &INCR=

MOVER &REG2, &MEM

ADD &REG2, &INCR

MOVEM &REG2, &MEM

MEND

MNT -

#MACRO #PP #KP #MDTP #KPDTP

CLEARMEM 2 1 0 0

ADD3NUM 3 0 6 0

INCR 2 1 13 0

MDT -

MOVER (P,3) ='0'

MOVEM (P,3) (P,1) + (P,2)

ADD (P,1) (P,2)

MOVEM (P,1) AREG

ADD (P,1) (P,3)

MOVER (P,2) (P,1)

ADD (P,2) (P,3)

MOVEM (P,2) (P,1)

PNTAB -

&X

&N

&REG

&A

&B

&C

&MEM

&REG2

&INCR

KPDTAB -

CODE -

0 &REG MACRO

import re

def prototype\_processing(prototype,MDTP,KPDTP):

KP = 0

PP = 0

i = 0

pwords = [x.upper() for x in prototype ]

for i in range(len(pwords)):

s=1

if pwords[i].startswith('&') and not pwords[i].\_\_contains\_\_('=') :

parameter = pwords[i]

temp[parameter] = list()

temp[parameter].append(f"(P,{str(i)})")

PP+=1

PNTAB.write(f"{str(pwords[i])}\n")

if pwords[i].startswith('&') and pwords[i].\_\_contains\_\_("="):

twords = pwords[i].split("=")

k\_parameter = twords[0]

temp[k\_parameter] = list()

temp[k\_parameter].append(f"(P,{str(i)})")

if len(twords) == 2 and twords[1] != '':

KPDTAB.write(f"{str(KPDTP)} {str(twords[0])} {str(words[0])}")

KPDTP += KP

KP += 1

PNTAB.write(f"{str(twords[0])} \n")

else:

KP += 1

PNTAB.write(f"{str(twords[0])} \n")

MNT.write(f"{str(prototype[0])}\t{str(PP)}\t{str(KP)} \t{str(MDTP)} \t{str(KPDTP)}\n")

def process\_MDT(words):

global MDTP

for i in words.split():

if i == 'MACRO' or i == 'MEND':

continue

else:

if i.\_\_contains\_\_('&') and not i.\_\_contains\_\_('='):

var = i.split(',')

char = temp[var[0]]

MDT.write(f"{char[0]} ")

else:

MDT.write(f"{i} ")

MDTP+=1

MDT.write('\n')

MDTP = 0 #Macro Definition Table Pointer

KPDTP = 0 #Keyword Parameter Default Table Pointer

#Open Maro Input File

macro = open('input.txt','r')

#Macro Name Table

MNT = open('MNT.txt','a+')

MNT.truncate(0)

#Macro Definition Table

MDT = open('MDT.txt','a+')

MDT.truncate(0)

#Keyword Parameter Default Table

KPDTAB = open('KPDTAB.txt','a+')

KPDTAB.truncate(0)

#Parameter Name Table

PNTAB = open('PNTAB.txt','a+')

PNTAB.truncate(0)

lines = macro.readlines()

#Temporary MDT

mdt = []

temp = {}

macroName = []

i=0

while i < len(lines):

words = re.split(r'[\s,]+', lines[i])

words.pop()

for j in range(len(words)):

word = words[j]

if word == 'MACRO':

# print(words)

prototype = re.split(r'[\s,]+', lines[i + 1])

prototype\_processing(prototype, MDTP, KPDTP)

process\_MDT(lines[i])

i += 1