MACRO PROCESSOR

import re

f\_input = open("macro\_input.txt")

inputcode = list(line.strip() for line in f\_input)

MDT = []

MNT = {}

ALA\_list = {} # ALA\_list stores ALA for each macro, with the macro name as key input\_for\_pass\_2 = [

] iterator = iter(inputcode) while True:

try:

line = next(iterator) if line == "MACRO":

nameline = next(iterator) nameline = re.split('[,\s]', nameline) macro\_name = "" for token in nameline:

if "&" not in token:

macro\_name = token break

MNT[macro\_name] = len(MDT) ALA = {} arg\_counter = 0 for token in nameline:

if token is not macro\_name:

arg\_counter += 1

ALA[token] = "#" + str(arg\_counter) nameline[nameline.index(token)] = ALA[ token]

ALA\_list[macro\_name] = ALA MDT.append(nameline)

while True:

macroline = next(iterator) for argument in ALA.keys():

if argument in macroline:

macroline = macroline.replace(argument, ALA[argument])

MDT.append(macroline) if macroline == "MEND":

break else:

input\_for\_pass\_2.append(line)

except StopIteration: break print("\nMNT is ")

for line in MNT.items():

print(line)

print("\nMDT is ") for line in MDT: print(line)

print("\nALAs are ") for line in ALA\_list.items(): print(line)

iterator = iter(input\_for\_pass\_2) print("\n Final Output is ") while True: try:

line = next(iterator) line = re.split('[,\s]', line) if any(word in line for word in MNT.keys()): macroname = "" if line[0] in MNT.keys():

macroname = line[0]

else:

macroname = line[1] label = line[0]

actual\_args = [] for token in line: if not token == macroname:

actual\_args.append(token)

ALA = ALA\_list[macroname]

ALA = {val: key for key, val in ALA.items()

} formal\_args = sorted(list(ALA.keys())) for i in range(len(formal\_args)):

ALA[formal\_args[i]] = actual\_args[ i]

MDTP = MNT[macroname] + 1 while "MEND" not in MDT[MDTP]:

line = MDT[MDTP] for formal\_arg, actual\_arg in ALA.items(): line = line.replace(formal\_arg, actual\_arg)

print(line)

MDTP += 1 else:

print(" ".join(line))

except StopIteration:

break

Sample Code :

MACRO

INCR &ARG1

L AX,&ARG1

A AX,1

MEND

MACRO

FOOBAR &ARG1,&ARG2

L AX,&ARG1

L BX,&ARG2

ST AX,BX

MEND

MACRO

&LAB HARAMBE &ARG1

&LAB SR &ARG1,1

RR &ARG1,2

MEND

START 0

INCR 69

FOOBAR 69,96

LOOP HARAMBE 69

DC F'69'

END

**Output:**

