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TY B

## Assignment 3

# AIM: - Design suitable data structures and implement pass-I of a two-pass Macro processor.

Source code:

*import* pandas *as* pd  
*from* itertools *import* chain  
  
mdt = pd.DataFrame(columns=['Index', 'Description'])  
mnt = pd.DataFrame(columns=['Index', 'Name', 'No of Arguments', 'Start Index'])  
  
temp\_ala = []  
mdtc = 1  
mntc = 1  
alac = 1  
id\_mnt = 0  
id\_mdt = 0  
id = 0  
my\_file = open("input\_macro.txt", "r")  
data = my\_file.read()  
data\_into\_list = data.split("\n")  
*# print(data\_into\_list)*my\_file.close()  
macro\_start\_index = [i *for* i *in* range(len(data\_into\_list)) *if* data\_into\_list[i] == "MACRO"]  
*# print(macro\_start\_index)*macro\_stop\_index = [i *for* i *in* range(len(data\_into\_list)) *if* data\_into\_list[i] == "MEND"]  
*# print(macro\_stop\_index)  
# print(type(data\_into\_list[2]))  
for* i *in* range(0, len(macro\_start\_index)):  
 start = int(macro\_start\_index[i] + 1)  
 stop = int(macro\_stop\_index[i])  
 *for* x *in* range(start, stop + 1):  
 *# print(data\_into\_list[x])* token = data\_into\_list[x].split()  
 *if* x == start:  
 *# print(token)* entry1 = (mntc, token[0], str(len(token) - 1), mdtc)  
 mnt.loc[id\_mnt] = entry1  
 mntc += 1  
 id\_mnt += 1  
 *for* j *in* range(1, len(token)):  
 *# print(token[j])* res = token[j] *in* chain(\*temp\_ala)  
 *if not* res:  
 temp\_ala.append((token[j], "#" + str(alac)))  
 alac += 1  
 *continue  
 if* token[-1] *in* chain(\*temp\_ala):  
 old = token[-1]  
 ind = [x[0] *for* x *in* temp\_ala].index(token[-1])  
 new = temp\_ala[ind][1]  
 *# print(new)* data\_into\_list[x] = data\_into\_list[x].replace(old, new)  
 *if* len(token) > 1:  
 *if* token[-2] *in* chain(\*temp\_ala):  
 old = token[-2]  
 ind = [x[0] *for* x *in* temp\_ala].index(token[-2])  
 new = temp\_ala[ind][1]  
 *# print(new)* data\_into\_list[x] = data\_into\_list[x].replace(old, new)  
 entry2 = (mdtc, data\_into\_list[x])  
 mdt.loc[id\_mdt] = entry2  
 mdtc += 1  
 id\_mdt += 1  
  
ala = pd.DataFrame(temp\_ala, columns=['Name', 'Position'])  
*# print(mnt)  
# print(ala)  
# print(mdt)*f2 = open("mdt.txt", mode="wt")  
dfasString = mdt.to\_string(index=*False*)  
f2.write(dfasString)  
  
f3 = open("mnt.txt", mode="wt")  
dfasString = mnt.to\_string(index=*False*)  
f3.write(dfasString)  
  
f4 = open("ala.txt", mode="wt")  
dfasString = ala.to\_string(index=*False*)  
f4.write(dfasString)

Input program:

Text

Description automatically generated

Output:

Since this is the pass 1 of the macro processor we only create the macro description table(mdt) , macro name table(mnt) and argument list array(ala) and are passed on to pass 2.

MNT:

A screenshot of a computer

Description automatically generated with medium confidence

ALA:

Graphical user interface, text, application

Description automatically generated

MDT:

Text

Description automatically generated

Note: No advance macro facility.