

```
In [ ]: import pandas as pd
import numpy as np
from google.colab import drive
```

```
In [ ]: # Mount drive from Google Drive
drive.mount('/content/drive')
```

Mounted at /content/drive

```
In [ ]: # Loading Department spending data as "df"
df = pd.read_excel('/content/drive/Shared drives/Spark! and Sustainable
Purchasing/Data/Department Mason spend.xlsx')
df = df.drop(columns=['Without\nPurchase Order', 'Unnamed: 19', 'Unnam
ed: 20']).dropna()
df
```

Out[]:

	ARAVO Vendor ID	Vendor	Vendor Name	Type of Business	PO Creation Date	Product P/N (Vendor)	Shopper	
0	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2016- 01-06	GMT6505	TIARAT	Z
1	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2016- 01-06	NES35110BX	TIARAT	Z
2	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2016- 01-11	GMT4050	MIKEJD	Z
3	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2016- 01-11	ITD102042	MLMORRIS	Z
4	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2016- 01-12	HEWC9731A	AMACKIN	Z
...
61047	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2020- 06-04	GMT6003	ADASILVA	Z
61048	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2020- 06-04	GMT6520	ADASILVA	Z
61049	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2020- 06-04	GMT6570	ADASILVA	Z
61050	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2020- 06-04	GMT6663	ADASILVA	Z
61051	10572031.0	10000800.0	WB Mason Company	OFFICE SUPPLIES & COMMERCIAL S	2020- 06-08	NES35110BX	YRODRIGU	Z

61048 rows × 18 columns

```
In [ ]: #Preprocessing data
df=df[df['Category'].str.contains("Coffee")]
df1 = df['Description'].str.split(',',expand=True)
df2 = df.drop('Description',axis=1).join(df1)
df2.rename(columns={0:'catol'},inplace=True)
df2 = df2.loc[:, ('Product P/N (Vendor)', 'Unit name', 'Total Paid', 'Category', 'catol')]
df2[:50]
```

Out[]:

	Product P/N (Vendor)	Unit name	Total Paid	Category	catol
0	GMT6505	ADMINISTRATIVE SERVICES	19.68	Coffee	C-66920349 5853096957 Tea K- Cups Sampler
1	NES35110BX	ADMINISTRATIVE SERVICES	8.94	Coffee	Original Liquid Coffee Creamer
2	GMT4050	INFORMATION SERVICES & TECHNOLOGY	10.32	Coffee	Newman's Special Blend K-Cup Pods
3	ITD102042	INFORMATION SERVICES & TECHNOLOGY	28.52	Coffee	Half AND Half Liquid Coffee Creamer
12	NES35170BX	BUMC FACILITIES MANAGEMENT	6.90	Coffee	French Vanilla Liquid Coffee Creamer
13	NES35180BX	BUMC FACILITIES MANAGEMENT	6.90	Coffee	Hazelnut Liquid Coffee Creamer
18	DIE60052101	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	30.96	Coffee	Donut Shop Coffee K-Cup Pods
19	GMT14731	PROVOST	29.52	Coffee	English Breakfast Black Tea K-Cup Pods
20	GMT4061	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	20.64	Coffee	Dark Magic Extra Bold Coffee K- Cup Pods
21	GMT6545	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	21.61	Coffee	C-24871677 5751038288 French Roast Coffee K-Cu...
22	GMT6792	PROVOST	20.64	Coffee	Hazelnut Coffee K-Cup Pods
25	NES35170BX	QUESTROM SCHOOL OF BUSINESS (QST)	3.45	Coffee	French Vanilla Liquid Coffee Creamer
26	SBK11018185	COLLEGE OF ARTS AND SCIS (CAS)	36.60	Coffee	Coffee
27	SBK11018186	COLLEGE OF ARTS AND SCIS (CAS)	36.60	Coffee	Coffee
28	GMT6520	HENRY M GOLDMAN SCH OF DENTAL MED	10.32	Coffee	Breakfast Blend Coffee K-Cup Pods

		(GSDM)			
29	GMT6732	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	10.32	Coffee	French Vanilla Coffee K-Cup Pods
30	DIE60052101	INFORMATION SERVICES & TECHNOLOGY	10.32	Coffee	Donut Shop Coffee K-Cup Pods
32	GMT4050	INFORMATION SERVICES & TECHNOLOGY	10.32	Coffee	Newman's Special Blend K-Cup Pods
33	GMT4061	INFORMATION SERVICES & TECHNOLOGY	10.32	Coffee	Dark Magic Extra Bold Coffee K- Cup Pods
34	GMT4067	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	10.32	Coffee	C-22668816 5740860106 Dark Magic Decaf Extra B...
35	GMT6406	INFORMATION SERVICES & TECHNOLOGY	11.28	Coffee	C-65316246 5846393456 Hazelnut Coffee K-Cup Pods
36	GMT6700	CENTRAL ADMINISTRATION	10.32	Coffee	Caramel Vanilla Cream Coffee K- Cup Pods
37	GMT6732	CENTRAL ADMINISTRATION	10.32	Coffee	French Vanilla Coffee K-Cup Pods
38	GMT6758	INFORMATION SERVICES & TECHNOLOGY	10.32	Coffee	Seasonal Selections Pumpkin Spice Flavored Cof...
39	GMT6813	CENTRAL ADMINISTRATION	11.28	Coffee	Caf Caramel K-Cup Pods
40	GMT7534	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	13.15	Coffee	C-30467505 5777033708 Donut House Decaf Coffee...
41	GMT9577	CENTRAL ADMINISTRATION	13.44	Coffee	Veranda Blend Coffee K-Cups Pods
42	BUNBCF100B	COLLEGE OF ARTS AND SCIS (CAS)	1.59	Coffee	C-67095452 5853839401 Coffee Filters
43	MWH04648	COLLEGE OF ARTS AND SCIS (CAS)	7.63	Coffee	Coffee
44	GMT192919	GENERAL ED SUPPORT & ACADEMIC INITIATIVS	10.32	Coffee	C-31007345 5779523636 House Blend Coffee K-Cup...
45	GMT4050	GENERAL ED SUPPORT & ACADEMIC INITIATIVS	20.64	Coffee	Newman's Special Blend K-Cup Pods
46	GMT4061	GENERAL ED SUPPORT & ACADEMIC INITIATIVS	10.32	Coffee	Dark Magic Extra Bold Coffee K- Cup Pods
47	GMT6505	GENERAL ED SUPPORT & ACADEMIC INITIATIVS	19.68	Coffee	C-66920349 5853096957 Tea K- Cups Sampler
48	GMT6613	GENERAL ED SUPPORT & ACADEMIC INITIATIVS	20.64	Coffee	C-27903944 5764853562 Colombia K-Cup Pods
		GENERAL ED SUPPORT			

49	GMT6614	& ACADEMIC INITIATIVES	10.32	Coffee	Italian Roast K-Cup Pods
50	GMT6792	GENERAL ED SUPPORT & ACADEMIC INITIATIVES	20.64	Coffee	Hazelnut Coffee K-Cup Pods
51	NES35110BX	GENERAL ED SUPPORT & ACADEMIC INITIATIVES	5.96	Coffee	Original Liquid Coffee Creamer
52	NES35170BX	GENERAL ED SUPPORT & ACADEMIC INITIATIVES	3.45	Coffee	French Vanilla Liquid Coffee Creamer
53	NES35180BX	GENERAL ED SUPPORT & ACADEMIC INITIATIVES	3.45	Coffee	Hazelnut Liquid Coffee Creamer
54	SBK11018193	THE BU ACADEMY	55.44	Coffee	C-63497833 5838514224 Coffee
57	DXE5342CDPK	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	4.00	Coffee	C-31568461 5782067773 PerfecTouch Hot Cups
58	FOL20631	COLLEGE OF ARTS AND SCIS (CAS)	7.51	Coffee	C-24893732 5751142079 Coffee
59	GMT1243	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	13.15	Coffee	C-19995668 5728638537 100% Columbian Coffee K-...
60	GMT1266	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	13.15	Coffee	C-24896448 5751154779 Espresso Style K-Cup Pods
61	GMT14734	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	9.84	Coffee	Green Tea K-Cup Pods
62	GMT4050	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	10.32	Coffee	Newman's Special Blend K-Cup Pods
63	GMT4061	GLOBAL PROGRAMS	20.64	Coffee	Dark Magic Extra Bold Coffee K- Cup Pods
64	GMT6080	CENTRAL ADMINISTRATION	9.84	Coffee	English Breakfast Tea K-Cup Pods
65	GMT6082	CENTRAL ADMINISTRATION	9.84	Coffee	C-74438575 5881900948 Earl Grey Tea K-Cup Pods
66	GMT6407	GLOBAL PROGRAMS	11.28	Coffee	Colombian Peaks Coffee K-Cup Pods

```
In [ ]: #细分到kcup
df3=df2[df2['cato1'].str.contains("K-Cup")]
df3 = df3.loc[:, ('Product P/N (Vendor)', 'Unit name', 'Total Paid', 'cato1')]
df3[:10]
```

Out[]:

	Product P/N (Vendor)	Unit name	Total Paid	cato1
0	GMT6505	ADMINISTRATIVE SERVICES	19.68	C-66920349 5853096957 Tea K-Cups Sampler
2	GMT4050	INFORMATION SERVICES & TECHNOLOGY	10.32	Newman's Special Blend K-Cup Pods
18	DIE60052101	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	30.96	Donut Shop Coffee K-Cup Pods
19	GMT14731	PROVOST	29.52	English Breakfast Black Tea K-Cup Pods
20	GMT4061	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	20.64	Dark Magic Extra Bold Coffee K-Cup Pods
21	GMT6545	PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC	21.61	C-24871677 5751038288 French Roast Coffee K-Cu...
22	GMT6792	PROVOST	20.64	Hazelnut Coffee K-Cup Pods
28	GMT6520	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	10.32	Breakfast Blend Coffee K-Cup Pods
29	GMT6732	HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)	10.32	French Vanilla Coffee K-Cup Pods
30	DIE60052101	INFORMATION SERVICES & TECHNOLOGY	10.32	Donut Shop Coffee K-Cup Pods

```
In [ ]: df5=df3['Unit name'].value_counts()
df5
```

```
Out[ ]: HENRY M GOLDMAN SCH OF DENTAL MED (GSDM)      3013
SCHOOL OF MEDICINE (BUSM)                             2744
GENERAL ED SUPPORT & ACADEMIC INITIATIVS              2251
COLLEGE OF ARTS AND SCIS (CAS)                        1981
ADMINISTRATIVE SERVICES                               1746
ENROLLMENT & STUDENT AFFAIRS                          1436
SCHOOL OF PUBLIC HEALTH (SPH)                         1290
CRC FACILITIES MANAGEMENT & PLANNING                  1253
VICE PRESIDENT FINANCE                                1229
METROPOLITAN COLLEGE (MET)                            1222
INFORMATION SERVICES & TECHNOLOGY                     1106
ACADEMIC INSTITUTES & CENTERS                          941
SCHOOL OF LAW (LAW)                                   917
PHYSICAL DEVELOPMENT PROGRAMS & ATHLETIC               885
PROVOST                                                 879
UNIV PROFESSORS-HONORS COLLEGE                        745
QUESTROM SCHOOL OF BUSINESS (QST)                     713
```

MEDICAL CAMPUS ADMINISTRATION (BUMC)	698
UNIVERSITY LIBRARIES	656
GRADUATE MEDICAL SCIENCES (GMS)	599
SARGENT COLLEGE OF HEALTH & REHAB. SCI.	546
COLLEGE OF FINE ARTS (CFA)	502
WHEELLOCK COLLEGE OF EDUC & HUMAN DEVELOP	464
EVENTS & CONFERENCES	450
CRC RENTAL PROPERTIES	444
NBL ACADEMIC PLANT	415
PARDEE SCHOOL OF GLOBAL STUDIES	401
COLLEGE OF ENGINEERING (ENG)	385
SCHOOL OF THEOLOGY (STH)	365
CENTRAL ADMINISTRATION	349
HUMAN RESOURCES	344
MET & EXTENDED EDUCATION ADMINISTRATION	310
STUDENT LIFE	304
NATL EMERGING INFECTIOUS DIS LAB (NEIDL)	287
STUDENT HEALTH SERVICES	281
GLOBAL PROGRAMS	252
SDM DENTAL CLINICS	228
SCHOOL OF SOCIAL WORK (SSW)	202
COLLEGE OF COMMUNICATION (COM)	184
CRC RESIDENCE LIFE	169
COLLEGE OF GENERAL STUDIES (CGS)	154
FACULTY AND STAFF BENEFITS	143
MET SPECIAL PROGRAMS NON-CREDIT (MSP)	129
BUMC FACILITIES MANAGEMENT	128
MARKETING AND COMMUNICATION	110
PHYSICAL EDUCATION, RECREATION & DANCE	80
HARRY AGGANIS ARENA	76
DEVELOPMENT & ALUMNI RELATIONS	68
SCHOOL OF HOSPITALITY (SHA)	46
OTHER OPS & AUXILIARY	46
THE BU ACADEMY	29
CRC PARKING	12
GENERAL INSTITUTIONAL EXP	6
SUMMER TERM (SUM)	5

Name: Unit name, dtype: int64

```
In [ ]: df4 = pd.read_excel('k-cup_cost.xls')
df4.dropna
df4[:55]
```

Out[]:

	Unnamed: 0	Product P/N (Vendor)	Unit name	Total Paid		cato1	dept-nar
0	0	GMT6505	ACADEMIC INSTITUTES & CENTERS	30.96	C-66920349 5853096957 Tea K-Cups Sampler		HENRY GOLDMAN SCHOOL OF DENTAL MEDICINE (GSD)
1	2	GMT4050	ACADEMIC INSTITUTES & CENTERS	30.96	Newman's Special Blend K-Cup Pods		SCHOOL OF MEDICINE (BUS)

2	18	DIE60052101	ACADEMIC INSTITUTES & CENTERS	10.32	Donut Shop Coffee K-Cup Pods	GENERAL I SUPPORT ACADEM INITIATI'
3	19	GMT14731	ACADEMIC INSTITUTES & CENTERS	51.60	English Breakfast Black Tea K- Cup Pods	COLLEGE (C ARTS AND SC (CA
4	20	GMT4061	ACADEMIC INSTITUTES & CENTERS	30.96	Dark Magic Extra Bold Coffee K- Cup Pods	ADMINISTRATI' SERVICI
5	21	GMT6545	ACADEMIC INSTITUTES & CENTERS	20.64	C-24871677 5751038288 French Roast Coffee K-Cu...	ENROLLMENT STUDEI AFFAIR
6	22	GMT6792	ACADEMIC INSTITUTES & CENTERS	20.64	Hazelnut Coffee K-Cup Pods	SCHOOL (C PUBLIC HEAL (SP
7	28	GMT6520	ACADEMIC INSTITUTES & CENTERS	20.64	Breakfast Blend Coffee K-Cup Pods	CRC FACILITI MANAGEMENT PLANNIN
8	29	GMT6732	ACADEMIC INSTITUTES & CENTERS	30.96	French Vanilla Coffee K-Cup Pods	VICE PRESIDEI FINANC
9	30	DIE60052101	ACADEMIC INSTITUTES & CENTERS	51.60	Donut Shop Coffee K-Cup Pods	METROPOLIT/ COLLEGE (ME
10	32	GMT4050	ACADEMIC INSTITUTES & CENTERS	41.28	Newman's Special Blend K-Cup Pods	INFORMATIC SERVICES TECHNOLOC
11	33	GMT4061	ACADEMIC INSTITUTES & CENTERS	41.28	Dark Magic Extra Bold Coffee K- Cup Pods	ACADEM INSTITUTES CENTEI
12	34	GMT4067	ACADEMIC INSTITUTES & CENTERS	16.86	C-22668816 5740860106 Dark Magic Decaf Extra B...	SCHOOL OF LA (LA'
13	35	GMT6406	ACADEMIC INSTITUTES & CENTERS	30.96	C- 65316246 5846393456 Hazelnut Coffee K-Cup Pods	PHYSIC, DEVELOPMEI PROGRAMS ATHLET
14	36	GMT6700	ACADEMIC INSTITUTES & CENTERS	20.64	Caramel Vanilla Cream Coffee K- Cup Pods	PROVOI
15	37	GMT6732	ACADEMIC INSTITUTES & CENTERS	19.68	French Vanilla Coffee K-Cup Pods	UN PROFESSOR HONOF COLLEC
16	38	GMT6758	ACADEMIC INSTITUTES & CENTERS	28.18	Seasonal Selections Pumpkin Spice Flavored Cof...	QUESTRC SCHOOL (C BUSINESS (Q
17	39	GMT6813	ACADEMIC INSTITUTES & CENTERS	20.64	Caf Caramel K-Cup Pods	MEDIC, CAMPI ADMINISTRATIC (BUM

18	40	GMT7534	ACADEMIC INSTITUTES & CENTERS	10.32	C-30467505 5777033708 Donut House Decaf Coffee...	UNIVERSI LIBRARI
19	41	GMT9577	ACADEMIC INSTITUTES & CENTERS	30.96	Veranda Blend Coffee K-Cups Pods	GRADUA MEDIC, SCIENCES (GM
20	44	GMT192919	ACADEMIC INSTITUTES & CENTERS	22.56	C-31007345 5779523636 House Blend Coffee K-Cup...	SARGEI COLLEGE (C HEALTH- REHAB. S
21	45	GMT4050	ACADEMIC INSTITUTES & CENTERS	61.92	Newman's Special Blend K-Cup Pods	COLLEGE (C FINE ARTS (CF
22	46	GMT4061	ACADEMIC INSTITUTES & CENTERS	61.92	Dark Magic Extra Bold Coffee K- Cup Pods	WHEELOC COLLEGE (C EDUC & HUM/ DEVELC
23	47	GMT6505	ACADEMIC INSTITUTES & CENTERS	20.64	C-66920349 5853096957 Tea K- Cups Sampler	EVENTS CONFERENCI
24	48	GMT6613	ACADEMIC INSTITUTES & CENTERS	10.32	C- 27903944 5764853562 Colombia K-Cup Pods	CRC RENT, PROPERTII
25	49	GMT6614	ACADEMIC INSTITUTES & CENTERS	10.32	Italian Roast K-Cup Pods	NBL ACADEM PLAI
26	50	GMT6792	ACADEMIC INSTITUTES & CENTERS	20.64	Hazelnut Coffee K-Cup Pods	PARDEE SCHOC OF GLOB, STUDII
27	59	GMT1243	ACADEMIC INSTITUTES & CENTERS	20.64	C-19995668 5728638537 100% Columbian Coffee K-...	COLLEGE (C ENGINEERIN (EN
28	60	GMT1266	ACADEMIC INSTITUTES & CENTERS	20.64	C- 24896448 5751154779 Espresso Style K-Cup Pods	SCHOOL (C THEOLOGY (ST
29	61	GMT14734	ACADEMIC INSTITUTES & CENTERS	20.64	Green Tea K-Cup Pods	CENTR, ADMINISTRATIC
30	62	GMT4050	ACADEMIC INSTITUTES & CENTERS	20.64	Newman's Special Blend K-Cup Pods	HUM/ RESOURCI
31	63	GMT4061	ACADEMIC INSTITUTES & CENTERS	30.96	Dark Magic Extra Bold Coffee K- Cup Pods	MET & EXTENDI EDUCATIC ADMINISTRATIC
32	64	GMT6080	ACADEMIC INSTITUTES & CENTERS	30.96	English Breakfast Tea K-Cup Pods	STUDENT LI
33	65	GMT6082	ACADEMIC INSTITUTES & CENTERS	10.32	C-74438575 5881900948 Earl Grey Tea K-Cup Pods	NATL EMERGIN INFECTIOUS C LAB (NEIC
			ACADEMIC		Colombian Peaks Coffee K-Cup	STUDEI

34	66	GMT6407	INSTITUTES & CENTERS	10.32		Pods	HEAL ^T SERVICE
35	67	GMT6602	ACADEMIC INSTITUTES & CENTERS	41.28	74602027 5882500770 Vermont Country Blend Co...	C-Ver	GLOB, PROGRAM
36	68	GMT6663	ACADEMIC INSTITUTES & CENTERS	41.28	Nantucket Blend Coffee	K-Cup Pods	SDM DENT, CLINIC
37	69	GMT6663	ACADEMIC INSTITUTES & CENTERS	41.28	Nantucket Blend Coffee	K-Cup Pods	SCHOOL (SOCIAL WORK) (SS)
38	70	GMT6694	ACADEMIC INSTITUTES & CENTERS	20.64	French Roast Coffee	K-Cup Pods	COLLEGE (COMMUNICATION) (CO)
39	71	GMT6801	ACADEMIC INSTITUTES & CENTERS	20.64	Milk Chocolate Hot Cocoa	K-Cup Pods	CRC RESIDENT LIAISON
40	72	GMT6802	ACADEMIC INSTITUTES & CENTERS	20.64	Dark Chocolate Hot Cocoa	K-Cup Pods	COLLEGE (GENERAL STUDIES) (CG)
41	73	GMT6990	ACADEMIC INSTITUTES & CENTERS	20.64	Mahogany Coffee	K-Cup Pods	FACULTY AND STAFF BENEFIT
42	74	GMT6999	ACADEMIC INSTITUTES & CENTERS	20.64	Half-Caff Coffee	K-Cup Pods	MET SPECIAL PROGRAM NON-CREED (MS)
43	75	GMT7522	ACADEMIC INSTITUTES & CENTERS	41.28	Breakfast Blend Decaf Coffee	K-Cup Pods	BUMC FACILITIES MANAGEMENT
44	76	GMT7602	ACADEMIC INSTITUTES & CENTERS	41.28	Vermont Country Blend Decaf Coffee	K-Cup Pods	MARKETING AND COMMUNICATION
45	77	GMT9572	ACADEMIC INSTITUTES & CENTERS	20.64	Pike Place Roast Coffee	K-Cup Pods	PHYSICAL EDUCATION RECREATION DANCE
46	78	GMT9577	ACADEMIC INSTITUTES & CENTERS	41.28	Veranda Blend Coffee	K-Cups Pods	HARRY AGGAR AREA
47	114	GMT14734	ACADEMIC INSTITUTES & CENTERS	20.64	Green Tea	K-Cup Pods	DEVELOPMENT ALUM RELATION
48	115	GMT4061	ACADEMIC INSTITUTES & CENTERS	11.28	Dark Magic Extra Bold Coffee	K-Cup Pods	SCHOOL (HOSPITALITY) (SH)
49	116	GMT4061	ACADEMIC INSTITUTES & CENTERS	20.64	Dark Magic Extra Bold Coffee	K-Cup Pods	OTHER OPS AUXILIARY
50	117	GMT4061	ACADEMIC INSTITUTES	20.64	Dark Magic Extra Bold Coffee	K-Cup Pods	THE E ACADEM

			& CENTERS			
51	118	GMT6000	ACADEMIC INSTITUTES & CENTERS	20.64	67718762 5856420454 Perfetto K-Cup Pods	CRC PARKIN
52	119	GMT6003	ACADEMIC INSTITUTES & CENTERS	20.64	Colombian Coffee K-Cup Pods	GENER INSTITUTION, E
53	120	GMT6201	ACADEMIC INSTITUTES & CENTERS	41.28	Hot Apple Cider K-Cup Pods	SUMMER TEF (SU
54	121	GMT6520	ACADEMIC INSTITUTES & CENTERS	20.64	Breakfast Blend Coffee K-Cup Pods	N:

```
In [ ]: for i in range(0,54):
        str1 = df4['dept-name'][i][0:12]
        a = df4[df4['Unit name'].str.contains(str1)]
        df4['Total cost (dollars) '][i] = a['Total Paid'].sum()
```

<ipython-input-59-695e4c9f8d0e>:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
df4['Total cost (dollars) '][i] = a['Total Paid'].sum()
```

```
In [ ]: df4[:55]
```

Out[]:

	Unnamed: 0	Product P/N (Vendor)	Unit name	Total Paid	cato1	dept-nar
0	0	GMT6505	ACADEMIC INSTITUTES & CENTERS	30.96	C-66920349 5853096957 Tea K- Cups Sampler	HENRY GOLDMAN SC OF DENTAL MI (GSD
1	2	GMT4050	ACADEMIC INSTITUTES & CENTERS	30.96	Newman's Special Blend K-Cup Pods	SCHOOL (C MEDICINE (BUS
2	18	DIE60052101	ACADEMIC INSTITUTES & CENTERS	10.32	Donut Shop Coffee K-Cup Pods	GENERAL I SUPPORT ACADEM INITIATI
3	19	GMT14731	ACADEMIC INSTITUTES & CENTERS	51.60	English Breakfast Black Tea K- Cup Pods	COLLEGE (C ARTS AND SC (CA
4	20	GMT4061	ACADEMIC INSTITUTES & CENTERS	30.96	Dark Magic Extra Bold Coffee K- Cup Pods	ADMINISTRATI SERVICI
			ACADEMIC			ENROLLMENT

5	21	GMT6545	INSTITUTES & CENTERS	20.64	C-24871677 5751038288 French Roast Coffee K-Cu...	STUDEI AFFAI
6	22	GMT6792	ACADEMIC INSTITUTES & CENTERS	20.64	Hazelnut Coffee K-Cup Pods	SCHOOL (PUBLIC HEAL' (SP
7	28	GMT6520	ACADEMIC INSTITUTES & CENTERS	20.64	Breakfast Blend Coffee K-Cup Pods	CRC FACILITII MANAGEMENT PLANNIN
8	29	GMT6732	ACADEMIC INSTITUTES & CENTERS	30.96	French Vanilla Coffee K-Cup Pods	VICE PRESIDEI FINANCI
9	30	DIE60052101	ACADEMIC INSTITUTES & CENTERS	51.60	Donut Shop Coffee K-Cup Pods	METROPOLIT/ COLLEGE (ME
10	32	GMT4050	ACADEMIC INSTITUTES & CENTERS	41.28	Newman's Special Blend K-Cup Pods	INFORMATIC SERVICES TECHNOLOG
11	33	GMT4061	ACADEMIC INSTITUTES & CENTERS	41.28	Dark Magic Extra Bold Coffee K-Cup Pods	ACADEM INSTITUTES CENTER
12	34	GMT4067	ACADEMIC INSTITUTES & CENTERS	16.86	C-22668816 5740860106 Dark Magic Decaf Extra B...	SCHOOL OF LA (LA'
13	35	GMT6406	ACADEMIC INSTITUTES & CENTERS	30.96	C-65316246 5846393456 Hazelnut Coffee K-Cup Pods	PHYSIC, DEVELOPMEI PROGRAMS ATHLET
14	36	GMT6700	ACADEMIC INSTITUTES & CENTERS	20.64	Caramel Vanilla Cream Coffee K-Cup Pods	PROVO:
15	37	GMT6732	ACADEMIC INSTITUTES & CENTERS	19.68	French Vanilla Coffee K-Cup Pods	UN PROFESSOR HONOF COLLEGE
16	38	GMT6758	ACADEMIC INSTITUTES & CENTERS	28.18	Seasonal Selections Pumpkin Spice Flavored Cof...	QUESTRC SCHOOL (BUSINESS (Q
17	39	GMT6813	ACADEMIC INSTITUTES & CENTERS	20.64	Caf Caramel K-Cup Pods	MEDIC, CAMPI ADMINISTRATIC (BUM
18	40	GMT7534	ACADEMIC INSTITUTES & CENTERS	10.32	C-30467505 5777033708 Donut House Decaf Coffee...	UNIVERSI' LIBRARII
19	41	GMT9577	ACADEMIC INSTITUTES & CENTERS	30.96	Veranda Blend Coffee K-Cups Pods	GRADUA' MEDIC, SCIENCES (GM
20	44	GMT192919	ACADEMIC INSTITUTES & CENTERS	22.56	C-31007345 5779523636 House Blend Coffee K-Cup...	SARGEI COLLEGE (HEALTH- REHAB. S

21	45	GMT4050	ACADEMIC INSTITUTES & CENTERS	61.92	Newman's Special Blend K-Cup Pods	COLLEGE (C FINE ARTS (CF
22	46	GMT4061	ACADEMIC INSTITUTES & CENTERS	61.92	Dark Magic Extra Bold Coffee K- Cup Pods	WHEELOCK COLLEGE (C EDUC & HUM/ DEVELOP
23	47	GMT6505	ACADEMIC INSTITUTES & CENTERS	20.64	C-66920349 5853096957 Tea K- Cups Sampler	EVENTS CONFERENCE
24	48	GMT6613	ACADEMIC INSTITUTES & CENTERS	10.32	27903944 5764853562 Colombia K-Cup Pods	CRC RENT, PROPERTY
25	49	GMT6614	ACADEMIC INSTITUTES & CENTERS	10.32	Italian Roast K-Cup Pods	NBL ACADEM PLAID
26	50	GMT6792	ACADEMIC INSTITUTES & CENTERS	20.64	Hazelnut Coffee K-Cup Pods	PARDEE SCHO OF GLOB, STUDIES
27	59	GMT1243	ACADEMIC INSTITUTES & CENTERS	20.64	C-19995668 5728638537 100% Columbian Coffee K-...	COLLEGE (C ENGINEERING (EN
28	60	GMT1266	ACADEMIC INSTITUTES & CENTERS	20.64	24896448 5751154779 Espresso Style K-Cup Pods	SCHOOL (C THEOLOGY (ST
29	61	GMT14734	ACADEMIC INSTITUTES & CENTERS	20.64	Green Tea K-Cup Pods	CENTR, ADMINISTRAT
30	62	GMT4050	ACADEMIC INSTITUTES & CENTERS	20.64	Newman's Special Blend K-Cup Pods	HUM/ RESOURCES
31	63	GMT4061	ACADEMIC INSTITUTES & CENTERS	30.96	Dark Magic Extra Bold Coffee K- Cup Pods	MET & EXTEND EDUCATION ADMINISTRAT
32	64	GMT6080	ACADEMIC INSTITUTES & CENTERS	30.96	English Breakfast Tea K-Cup Pods	STUDENT LI
33	65	GMT6082	ACADEMIC INSTITUTES & CENTERS	10.32	C-74438575 5881900948 Earl Grey Tea K-Cup Pods	NATL EMERGIN INFECTIOUS C LAB (NEIL
34	66	GMT6407	ACADEMIC INSTITUTES & CENTERS	10.32	Colombian Peaks Coffee K-Cup Pods	STUDENT HEALTH SERVICES
35	67	GMT6602	ACADEMIC INSTITUTES & CENTERS	41.28	74602027 5882500770 Vermont Country Blend Co...	GLOB, PROGRAM
36	68	GMT6663	ACADEMIC INSTITUTES & CENTERS	41.28	Nantucket Blend Coffee K-Cup Pods	SDM DENT, CLINIC
37	69	GMT6663	ACADEMIC INSTITUTES	41.28	Nantucket Blend Coffee K-Cup Pods	SCHOOL (C SOCIAL WORK

			& CENTERS			(SS'
38	70	GMT6694	ACADEMIC INSTITUTES & CENTERS	20.64	French Roast Coffee K-Cup Pods	COLLEGE (COMMUNICATIO (CO
39	71	GMT6801	ACADEMIC INSTITUTES & CENTERS	20.64	Milk Chocolate Hot Cocoa K- Cup Pods	CRC RESIDENC LI
40	72	GMT6802	ACADEMIC INSTITUTES & CENTERS	20.64	Dark Chocolate Hot Cocoa K- Cup Pods	COLLEGE (GENER STUDIES (CG
41	73	GMT6990	ACADEMIC INSTITUTES & CENTERS	20.64	Mahogany Coffee K-Cup Pods	FACULTY AN STAFF BENEFIT
42	74	GMT6999	ACADEMIC INSTITUTES & CENTERS	20.64	Half-Caff Coffee K-Cup Pods	MET SPECI PROGRAM NON-CREC (MS
43	75	GMT7522	ACADEMIC INSTITUTES & CENTERS	41.28	Breakfast Blend Decaf Coffee K- Cup Pods	BUMC FACILITII MANAGEMENT
44	76	GMT7602	ACADEMIC INSTITUTES & CENTERS	41.28	Vermont Country Blend Decaf Coffee K-Cup Pods	MARKETING AN COMMUNICATIO
45	77	GMT9572	ACADEMIC INSTITUTES & CENTERS	20.64	Pike Place Roast Coffee K-Cup Pods	PHYSIC, EDUCATIO RECREATION DANC
46	78	GMT9577	ACADEMIC INSTITUTES & CENTERS	41.28	Veranda Blend Coffee K-Cups Pods	HARRY AGGAN AREI
47	114	GMT14734	ACADEMIC INSTITUTES & CENTERS	20.64	Green Tea K-Cup Pods	DEVELOPMENT ALUM RELATIO
48	115	GMT4061	ACADEMIC INSTITUTES & CENTERS	11.28	Dark Magic Extra Bold Coffee K- Cup Pods	SCHOOL (HOSPITALI (SH
49	116	GMT4061	ACADEMIC INSTITUTES & CENTERS	20.64	Dark Magic Extra Bold Coffee K- Cup Pods	OTHER OPS AUXLIAI
50	117	GMT4061	ACADEMIC INSTITUTES & CENTERS	20.64	Dark Magic Extra Bold Coffee K- Cup Pods	THE E ACADEM
51	118	GMT6000	ACADEMIC INSTITUTES & CENTERS	20.64	C- 67718762 5856420454 Perfetto K-Cup Pods	CRC PARKIN
52	119	GMT6003	ACADEMIC INSTITUTES & CENTERS	20.64	Colombian Coffee K-Cup Pods	GENER, INSTITUTION, E
53	120	GMT6201	ACADEMIC INSTITUTES & CENTERS	41.28	Hot Apple Cider K-Cup Pods	SUMMER TEF (SU

```
In [ ]: df4.to_excel('k-cup_cost111.xlsx')
```

```
In [ ]: #细分到bag
df6=df[df['Description'].str.contains("bag")]
df6 = df6.loc[:, ('Product P/N (Vendor)', 'Unit name', 'Total Paid', 'Description')]
df6[:10]
```

```
Out[ ]:
```

	Product P/N (Vendor)	Unit name	Total Paid	Description
1625	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
1751	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
1979	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
2415	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	197.6	C-63501701 5838532049 Our Blend Fair Trade Cof...
3191	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	193.0	C-63501701 5838532049 Our Blend Fair Trade Cof...
5224	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
5784	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
6248	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
7290	GMT4332	SCHOOL OF PUBLIC HEALTH (SPH)	96.5	C-63501701 5838532049 Our Blend Fair Trade Cof...
7291	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	193.0	C-63501701 5838532049 Our Blend Fair Trade Cof...

```
In [ ]: df7=df6['Unit name'].value_counts()
df7
```

```
Out[ ]: COLLEGE OF ARTS AND SCIS (CAS)      84
METROPOLITAN COLLEGE (MET)                  5
SCHOOL OF LAW (LAW)                          1
ACADEMIC INSTITUTES & CENTERS                 1
SCHOOL OF PUBLIC HEALTH (SPH)                 1
SUMMER TERM (SUM)                            1
SCHOOL OF MEDICINE (BUSM)                     1
Name: Unit name, dtype: int64
```

```
In [ ]: df6.to_excel('bags_cost.xlsx')
```

```
In [ ]: df7.dropna
df7 = pd.read_excel('bags_cost1.xlsx')
for i in range(0,6):
    str1 = df7['depart-name'][i][0:13]
    a = df7[df7['Unit name'].str.contains(str1)]
    df7['total cost'][i] = a['Total Paid'].sum()
```

<ipython-input-74-65a3637e64d3>:6: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
df7['total cost'][i] = a['Total Paid'].sum()
```

```
In [ ]: df7[:9]
```


Out[]:

	Unnamed: 0	Product P/N (Vendor)	Unit name	Total Paid	Description	Unnamed: 5	depart-name
0	1625	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	COLLEGE OF ARTS AND SCIS (CAS)
1	1751	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	METROPOLITAN COLLEGE (MET)
2	1979	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	SCHOOL OF LAW (LAW)
3	2415	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	197.6	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	SCHOOL OF PUBLIC HEALTH (SPH)
4	3191	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	193.0	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	SCHOOL OF MEDICINE (BUSM)
5	5224	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	ACADEMIC INSTITUTES & CENTERS
6	5784	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	SUMMER TERM (SUM)
7	6248	GMT4332	COLLEGE OF ARTS AND SCIS (CAS)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	NaN
8	7290	GMT4332	SCHOOL OF PUBLIC HEALTH (SPH)	96.5	63501701 5838532049 Our Blend Fair Trade Cof...	NaN	NaN

In []: df7.to_excel('bags_cost111.xlsx')

In []: