Using Python to improve the efficiency on generating report for the program team and the accounting team

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Background of this project

A non-for-profit organization operates programs for intellectual developmental disability patients. Every week the fiscal team receives the remittance data from Medicaid, and the team needs to analyze the data, and reports it to the bookkeeping team and the program operation team. Before using Python, the accounting team needs to spend about one hour to organize and analyze the data using Excel. Also, the report generated by Excel has limited insight to the program operation team to improve the billing process. In order to improve the efficiency and optimize the usage of remittance data, the accounting team decides to use Python script to generate remittance report.
Data used in this project has been manipulated and randomized.

To start, please enter the csv file name below.

Please enter the csv file name, and end with [.csv]:091619.csv

The following table shows the column names and their data types. However, not all the columns would be used by the accounting team for analyzing the remittance.

Out[73]: remit_filename   object
          sequence_no   int64
          batch_no   int64
          remit_number   int64
          invoice   int64
          line_no   int64
          account   float64
          first_name   object
          last_name   object
          mi   object
          patient_name   object
          reference_no   int64
          check_no   int64
          company_code   float64
          payor_id   float64
          insurance_id   object
          remit_code   float64
          remit_code_desc   object
          remit_status   object
          transaction_date   object
          transaction_type   int64
          amount   float64
          tot_charge_paid   float64
          tot_charge_deny   float64
          tot_charge_pend   int64
          claim_paid   int64
          claim_deny   int64
          claim_pend   int64
          amount_paid   float64
          amount_adj   float64
          approved_amount   int64
          coinsurance_amount   int64
          coinsurance_code   float64
          deductible_amount   int64
          posted   object
          proc_code   int64
          date_of_service   object
          date_of_service_thru   object
          provider_id   float64
          locator_code   float64
          medicaid_specialty_code   float64
          remit_receipt_date   object
          remit_posting_date   object
          claim_processor   object
          remark_code   object
          remark_code_desc   object
          provider_code   float64
          provider_name   float64
          remark_code_2   float64
          remark_code_3   float64
          remark_code_4   float64
          remark_code_5   float64
          remark_code_all   object
          office_location   float64
          inv_line   object
          remit_set_number   int64

```
check_amount                    int64
tot_charge_adj                  int64
auto_xover_payor              float64
auto_xover_payor_id           float64
date_of_service_yyyymm          int64
location_class                float64
service_name                  float64
service_class                 float64
pos_code                      float64
accept_assignment              object
adjustment_amount             float64
adjustment_reason             float64
adjustment_ref_no             float64
adjustment_amount_2           float64
adjustment_reason_2           float64
adjustment_ref_no_2           float64
adjustment_amount_3           float64
adjustment_reason_3           float64
adjustment_ref_no_3           float64
adjustment_amount_4           float64
adjustment_reason_4           float64
adjustment_ref_no_4           float64
adjustment_amount_5           float64
adjustment_reason_5           float64
adjustment_ref_no_5           float64
adjustment_amount_6           float64
adjustment_reason_6           float64
adjustment_ref_no_6           float64
grpamt                        float64
adj_group_code                 object
group_reason_code              object
authorization_number          float64
ssno                          float64
pat_responsiblity_amount        int64
is_first_line                   int64
dtype: object
```

WEEKLY REMITTANCE REPORT - TO EXECUTIVES AND PROGRAM DIRECTORS

This section gives basic information of the weekly remittance summary of different programs, by showing the amounts that were claimed, paid, and denied, with denial percentage. It also shows the list of clients that were not fully paid, with corresponding claim adjustment reason codes (the remit codes) and the remark codes. The billing specialist can contact the insurance company and rebill the clients based on their codes.

BASIC INFO

9/16/2019 8:43:32 AM was the remit posting time.
Total line read is 3534

Total payment will be received of the week is $ 2242701.87
Total denial amount is $ 81346.28
Total claimed amount is $ 2324048.15

PAYMENT ANALYSIS

1.Summary

program	claimed	paid	deny
Day Hab	1384456.28	1311931.00	72525.28
Pathway	77210.26	80293.65	-3083.39
PreVoc	149743.69	147069.80	2673.89
SEMP Caid	712637.92	703407.43	9230.49

2.Detail

program	month	claimed	paid	deny	paid %
Day Hab	201801	2953.51	0.00	2953.51	0.00
	201802	5292.80	0.00	5292.80	0.00
	201803	6048.91	0.00	6048.91	0.00
	201804	6048.91	0.00	6048.91	0.00
	201805	16634.51	8458.26	8176.25	50.85
	201806	17300.98	10380.59	6920.39	60.00
	201807	18454.38	12900.54	5553.84	69.91
	201808	9996.12	9865.12	131.00	98.69
	201809	7304.86	7209.12	95.73	98.69
	201810	18838.84	18591.95	246.89	98.69
	201811	15556.53	15556.53	0.00	100.00
	201812	7967.98	7967.98	0.00	100.00
	201901	12900.54	13088.01	-187.48	101.45
	201902	12521.11	12703.02	-181.91	101.45
	201903	9485.69	9623.51	-137.82	101.45
	201904	12317.95	12317.95	0.00	100.00
	201905	9238.64	9238.64	0.00	100.00
	201906	14627.33	0.00	14627.33	0.00
	201907	1175577.68	1158640.77	16936.91	98.56
	201908	5389.02	5389.02	0.00	100.00
Pathway	201907	77210.26	80293.65	-3083.39	103.99
PreVoc	201907	149743.69	147069.80	2673.89	98.21
SEMP Caid	201903	1815.83	0.00	1815.83	0.00
	201907	710822.09	703407.43	7414.66	98.96

Out[77]: Text(0.5, 1.0, 'Remittance Status of The Week')
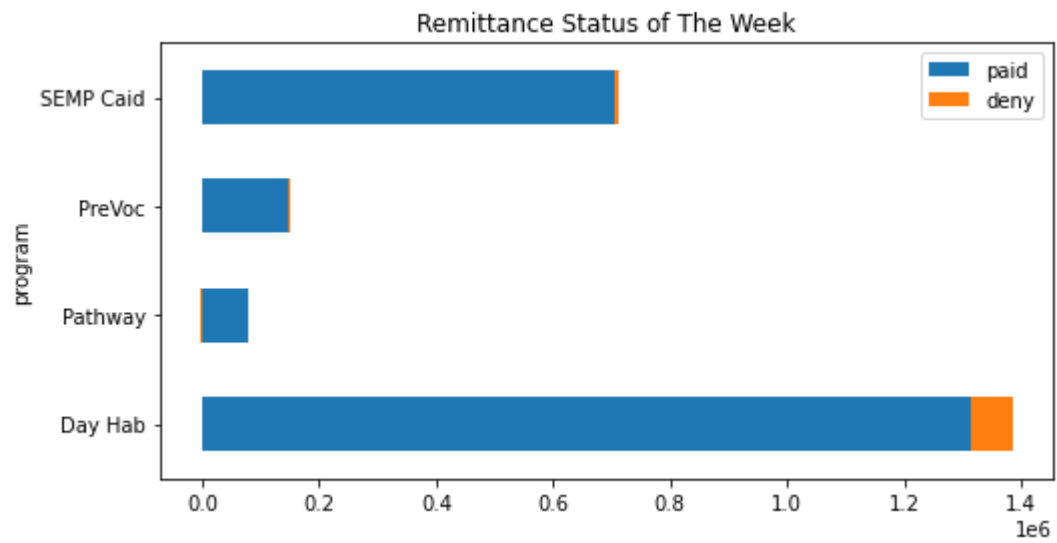
CLIENT ANALYSIS

```
Client that were denied (by programs):
                              claimed       paid       deny   paid %
name        program    month
A**m        Day Hab    201809   5382.53   5311.99      70.54    98.69
                       201810   6151.46   6070.84      80.62    98.69
                       201808   6920.39   6829.70      90.69    98.69
                       201801   2953.51      0.00    2953.51     0.00
                       201802   5292.80      0.00    5292.80     0.00
                       201805   5292.80      0.00    5292.80     0.00
                       201807   6920.39   1517.71    5402.68    21.93
                       201803   6048.91      0.00    6048.91     0.00
                       201804   6048.91      0.00    6048.91     0.00
                       201806   6920.39      0.00    6920.39     0.00
A*str**     Day Hab    201906  13857.47      0.00   13857.47     0.00
Ahm*d       Day Hab    201907    769.86      0.00     769.86     0.00
            PreVoc     201907   2673.89      0.00    2673.89     0.00
B*kk*r      Day Hab    201907  16167.05      0.00   16167.05     0.00
D****       SEMP Caid  201907   7414.66      0.00    7414.66     0.00
D**m***     Day Hab    201810  11533.99  11382.83     151.16    98.69
M**t*s      Day Hab    201906    769.86      0.00     769.86     0.00
M*tch***r   SEMP Caid  201903   1815.83      0.00    1815.83     0.00
S*rt*r*     Day Hab    201810   1153.40   1138.28      15.12    98.69
                       201809   1922.33   1897.14      25.19    98.69
                       201808   3075.73   3035.42      40.31    98.69
                       201807  11533.99  11382.83     151.16    98.69
                       201805  11341.71   8458.26    2883.46    74.58
```

REMARK AND REMIT CODE REPORT

```
1. REMARK CODE BY PROGRAMS:
                          claimed  paid      deny
program     remark # name
Day Hab     N30      Ahm*d     769.86   0.0    769.86
                     B*kk*r  16167.05   0.0  16167.05
PreVoc      N30      Ahm*d    2673.89   0.0   2673.89
SEMP Caid N30        D****    7414.66   0.0   7414.66

2. REMIT CODE BY PROGRAMS:
                          claimed       paid       deny
program     remit # name
Day Hab     29.0     A**m        37939.85       0.00  37939.85
                     S*rt*r*      3024.46       0.00   3024.46
            45.0     A**m        29098.50   28968.55    129.96
                     D**m***     37335.06   37559.06   -224.00
                     S*rt*r*     26002.70   25911.92     90.78
            96.0     Ahm*d         769.86       0.00    769.86
                     B*kk*r      16167.05       0.00  16167.05
            200.0    A*str**     13857.47       0.00  13857.47
                     M**t*s        769.86       0.00    769.86
Pathway     45.0     A****        1456.28    1515.61    -59.33
                     A**m         6513.55    6779.63   -266.08
                     A*st**       1426.61    1515.61    -89.00
                     B*ss**       2776.03    2889.14   -113.11
                     F***d        4596.38    4783.66   -187.28
                     F*tt*r       3276.63    3410.13   -133.50
                     G******Ort*z 5096.98    5304.65   -207.67
                     Gr*ss        4368.84    4546.84   -178.00
                     H***         8965.22    9330.50   -365.28
                     H**r*        5239.31    5358.74   -119.44
                     H*r***d*z    7235.89    7530.71   -294.82
                     L**r**       4277.82    4452.12   -174.30
                     M*rt***z      500.60     520.99    -20.40
                     P***         8692.17    9046.32   -354.15
                     R*dr*g**z    1092.21    1136.71    -44.50
                     S*m****g*     773.65     805.17    -31.52
                     Sm*th        2685.02    2794.41   -109.40
                     T*r*d*       8237.08    8572.69   -335.61
PreVoc      96.0     Ahm*d        2673.89       0.00   2673.89
SEMP Caid 96.0       D****        7414.66       0.00   7414.66
            200.0    M*tch***r    1815.83       0.00   1815.83
```

References

Claim Adjustment Reason Codes:

B1 Non-covered visits.

15 Payment adjusted because the submitted authorization number is missing

16 Claim/service lacks information which is needed for adjudication.

24 Payment for charges adjusted. Charges are covered under a capitation agreement/managed care plan.

29 The time limit for filing has expired.

45 Charges exceed your contracted/ legislated fee arrangement.

96 Non-covered charge(s).

97 Payment is included in the allowance for another service/procedure.

200 no description found

Remark Codes:

MA39 Missing/incomplete/invalid gender.

M49 Missing/incomplete/invalid value code(s) or amount(s).

M62 Missing/incomplete/invalid treatment authorization code.

M86 Service denied because payment already made for same/similar procedure within set time frame.

N216 Patient is not enrolled in this portion of our benefit package.

N30 Patient ineligible for this service.

N340 Missing/incomplete/invalid subscriber birth date.

PAYMENTS SUMMARY BY DATE OF SERVICES

```
Showing payment summary by date of service? (yes/no): yes

                        paid
program    date
Day Hab    1/10/2019      384.95
           1/11/2019     1154.81
           1/14/2019     1154.81
           1/15/2019      384.95
           1/16/2019      384.95
           1/17/2019      384.95
           1/18/2019     1154.81
           1/2/2019       384.95
           1/22/2019      384.95
           1/23/2019      384.95
           1/24/2019      384.95
           1/25/2019     1154.81
           1/28/2019      769.86
           1/29/2019      384.95
           1/3/2019       384.95
           1/30/2019      384.95
```

PAYMENTS SUMMARY BY NAME THEN DATE OF SERVICES

```
Showing payment summary by name then date of service? (yes/no): no
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WEEKLY REMITTANCE REPORT - TO ACCOUNTING AND BOOKKEEPING TEAM

This section gives basic information of the weekly remittance summary of different programs, by showing the amounts that were claimed, paid, and denied, with denial percentage. Since

some of the programs have different cost centers, the fiscal team need to allocate the payments into different cost centers before sending the report to the bookkeeping team. On the report, the fiscals need to write down the descriptions for the bookkeepers to post on the general ledger system.

BASIC INFO

Total payment will be received of the week is $ 2242701.87

PREVIEW DETAILS

program	month	claimed	paid	deny	paid %
Day Hab	201805	16634.51	8458.26	8176.25	50.85
	201806	17300.98	10380.59	6920.39	60.00
	201807	18454.38	12900.54	5553.84	69.91
	201808	9996.12	9865.12	131.00	98.69
	201809	7304.86	7209.12	95.73	98.69
	201810	18838.84	18591.95	246.89	98.69
	201811	15556.53	15556.53	0.00	100.00
	201812	7967.98	7967.98	0.00	100.00
	201901	12900.54	13088.01	-187.48	101.45
	201902	12521.11	12703.02	-181.91	101.45
	201903	9485.69	9623.51	-137.82	101.45
	201904	12317.95	12317.95	0.00	100.00
	201905	9238.64	9238.64	0.00	100.00
	201907	1175577.68	1158640.77	16936.91	98.56
	201908	5389.02	5389.02	0.00	100.00
Pathway	201907	77210.26	80293.65	-3083.39	103.99
PreVoc	201907	149743.69	147069.80	2673.89	98.21
SEMP Caid	201907	710822.09	703407.43	7414.66	98.96

The preview details section shows the remittance payment received at this week. According to the billing circle, when some programs receive big payments at a certain month, the programs would need to allocate the payments to different cost centers. In this remittance, we received the Medicaid payments from 5 programs: Day Hab, Pathway, PreVoc, Respite, and SEMP(Caid). Among these programs, Day Hab, Pathway, and SEMP have multiple cost centers. Therefore, in the Python script below, we enable an option for payment allocation for these 3 programs. The payment allocation amount depends on the estimated revenue given by the program operation staff, and the revenue is booked before we received the actual payment.

NOTICE TO BOOKKEEPING TEAM

Payment allocation for monthly billing needed? (yes/no): yes

```
      program  fy   month    cc           description         paid
0     Day Hab  18   201805   Multi      Day Hab 18 P3 201805      8458.26
1     Day Hab  18   201806   Multi      Day Hab 18 P3 201806     10380.59
2     Day Hab  19   201807   Multi      Day Hab 19 P3 201807     12900.54
3     Day Hab  19   201808   Multi      Day Hab 19 P3 201808      9865.12
4     Day Hab  19   201809   Multi      Day Hab 19 P3 201809      7209.12
5     Day Hab  19   201810   Multi      Day Hab 19 P3 201810     18591.95
6     Day Hab  19   201811   Multi      Day Hab 19 P3 201811     15556.53
7     Day Hab  19   201812   Multi      Day Hab 19 P3 201812      7967.98
8     Day Hab  19   201901   Multi      Day Hab 19 P3 201901     13088.01
9     Day Hab  19   201902   Multi      Day Hab 19 P3 201902     12703.02
10    Day Hab  19   201903   Multi      Day Hab 19 P3 201903      9623.51
11    Day Hab  19   201904   Multi      Day Hab 19 P3 201904     12317.95
12    Day Hab  19   201905   Multi      Day Hab 19 P3 201905      9238.64
13    Day Hab  20   201907   Multi      Day Hab 20 P3 201907   1158640.77
14    Day Hab  20   201908   Multi      Day Hab 20 P3 201908      5389.02
15    Pathway  20   201907   Multi      Pathway 20 P3 201907     80293.65
16     PreVoc  20   201907   PVCC1       PreVoc 20 P3 201907    147069.80
17  SEMP Caid  20   201907   Multi   SEMP Caid 20 P3 201907    703407.43
```

```
**********************************************
Allocation for Day Hab? (yes/no): yes
What is the month for this payment? yyyymm: 201907
>>Payment allocates to cost center DHCC2: 25000
>>Payment allocates to cost center DHCC3: 30000
>>Payment allocates to cost center DHCC4: 45000
>>Payment allocates to cost center DHCC5: 60000
>>Payment allocates to cost center DHCC1 (Default cost center): 998640.77

DayHab payments other than 201907 's billing should be posted under cost center
DHCC1
(if there are any).
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Allocation for SEMP? (yes/no): yes
What is the month for this payment? yyyymm: 201907
>>Payment allocates to cost center SCCC2: 50000
>>Payment allocates to cost center SCCC1 (Default cost center): 653407.43

SEMP payments other than 201907 's billing should posted under cost center SCCC
1
(if there are any).
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Allocation for Pathway? (yes/no): yes
What is the month for this payment? yyyymm: 201907
>>Payment allocates to cost center PWCC2: 20000
>>Payment allocates to cost center PWCC1 (Default cost center): 60293.65

Pathway payments other than 201907 's billing should be posted under cost cente
r PWCC1
(if there are any).
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