

CS-344 - Unix Operating System Fundamentals

Lecture 8
Miscellaneous Topics
&
Review

Based on slides created by
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Spring 2005 offering of
the course

Problem

- Calculate the total spent at the grocery store:

Code	Product	Quantity	Price
1234	Coke	2	1.10
9433	Windex	1	3.45
1534	Coffee	2	8.34
5943	Rice	5	1.33
2358	Butter	2	0.99

- Output:

Code	Product	Quantity	Price	ProductTotal
1234	Coke	2	1.10	2.20
9433	Windex	1	3.45	3.45
1534	Coffee	2	8.34	16.68
5943	Rice	5	1.33	6.65
2358	Butter	2	0.99	1.98
Total number of products bought: 12				
Subtotal:			30.96	
Tax:			3.71	
Total:			34.67	

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Solution 1 (II)

- ❑ The subtotal is the sum of all the product totals:
`subTotal=`echo "scale=2 $subTotal+$pTotal" | tr ' ' '\n' | bc``
- ❑ Add the column product Total to the output, in this case the output goes to the file *"receipt"*
`sed -n "/$product/s/$/\t$pTotal/ p" products >> receipt`
- ❑ Repeat this for each product in the grocery list

```
for product in $productList
do
...
done
```

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Solution 1 (III)

- ❑ Calculate the tax:
`tax=`echo "scale=2 $subTotal*$taxPercentage" | tr ' ' '\n' | bc``
- ❑ Calculate the total:
`total=`echo "scale=2 $subTotal+$tax" | tr ' ' '\n' | bc``
- ❑ Output the totals to *receipt*:

```
echo >> receipt
echo "Total number of products bought: $numProducts" >> receipt
echo "Subtotal:           $subTotal" >> receipt
echo "Tax:                $tax" >> receipt
echo "Total:              $total" >> receipt
```

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Solution 1 (IV)

- ❑ Some previous initialization steps:

```
productList=`sed -n '2~1 p' products | cut -f 1 | tr '\n' ' '`
if [ -f receipt ]; then rm receipt; fi
sed -n '/Code/s/$/\tProductTotal/ p' products > receipt
subTotal=0
tax=0
numProducts=0
total=0
taxPercentage=0.12
```

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Solution 1 (V)

```

productList=$(sed -n '2~1 p' products | cut -f 1 | tr '\n' ' ')
if [ "$receipt" ]; then m receipt fi
sed -n '/Code/s/$/ \ProductTotal/ p' products > receipt
subTotal=0
tax=0
numProducts=0
total=0
taxPercentage=0.12
for product in $productList; do
  expression=$(sed -n "/$product/ p" products | cut -f 3,4 | tr '\n' ' ')
  let numProducts+=Sum(Products); echo $expression | cut -d" " -f1
  pTotal=$(echo "scale=2 $expression" | tr '\n' '\n' | bc)
  subTotal=$(echo "scale=2 $subTotal+$pTotal" | tr '\n' '\n' | bc)
  sed -n "/$product/s/$/ \SubTotal/ p" products >> receipt
  dote .
  tax=$(echo "scale=2 $subTotal*$taxPercentage" | tr '\n' '\n' | bc)
  total=$(echo "scale=2 $subTotal+$tax" | tr '\n' '\n' | bc)
  echo >> receipt
  echo "Total number of products bought: Sum(Products)" >> receipt
  echo "Subtotal:          $subTotal" >> receipt
  echo "Tax:              $tax" >> receipt
  echo "Total:           $total" >> receipt

```

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Solution 2 (I)

- Each line on the input file has the form:

Code	Product	Quantity	Price
1234	Coke	2	1.10
- create a new column with the total per product (including heading) :


```

echo ProductTotal > temp1
sed -n '2~1 p' products | cut -f 3,4 | tr '\n' '*' | bc > temp2
cat temp1 temp2 > temp3
paste products temp3 > receipt2

```

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Solution 2 (II)

- Add the final receipt info:


```

echo >> receipt2
tempVar=$(sed -n '2~1 p' products | cut -f 3 | tr '\n' '+' | sed 's/+/ /')
echo "Total number of products bought: `echo $tempVar | bc`" >> receipt2

```
- Subtotal:


```

subTotal=`cat temp2 | tr '\n' '+' | sed -n 's/+/ \n/ p' | bc`
echo "Subtotal:          `echo $subTotal | bc`" >> receipt2

```
- Tax:


```

tax=`echo "$subTotal*$taxPercentage" | tr '\n' '\n' | bc`
echo "Tax:              $tax" >> receipt2

```

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Solution 2 (III)

- ❑ Finally, the receipt's total:

```
total=`echo "$subTotal+$tax " | tr ' ' '\n' | bc`
echo "Total:          $total" >> receipt2
```
- ❑ We also need to delete the temporary files:

```
rm temp1 temp2 temp3
```
- ❑ And some initializing steps at the beginning:

```
if [ -f receipt2 ]; then rm receipt2; fi

taxPercentage=0.12
```

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Solution 2

```
if [ -f receipt2 ]; then rm receipt2; fi

taxPercentage=0.12

# create a new column with the amount per product (including heading)
echo "Product Total" > temp1
sed -n 2-1 p products | cut -f3,4 | tr '\t' '\n' | bc > temp2
cat temp1 temp2 > temp3
paste products temp3 > receipt2

rm temp1 temp3 # delete temporal files

# add the final receipt info
echo >> receipt2
tempVar=`sed -n 2-1 p products | cut -f3 | tr '\t' '\n' | sed 's/\t//g'`
echo "Total number of products bought: $tempVar" | bc >> receipt2
subTotal=`cat temp2 | tr '\n' '\t' | sed -n 's/\t//g' | bc`
echo "Subtotal:          $subTotal" | bc >> receipt2
tax=`echo "$subTotal*$taxPercentage" | tr '\t' '\n' | bc`
echo "Tax:              $tax" >> receipt2
total=`echo "$subTotal+$tax" | tr '\t' '\n' | bc`
echo "Total:          $total" >> receipt2

rm temp2 # delete temporal file
```

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