

CEGEP VANIER COLLEGE

CENTRE FOR CONTINUING EDUCATION

Introduction to Linux

420-995-VA

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Lab 4

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Lab 4: awk Program

1. Review Lab 1, Lab 2, and Lab 3:

a) Using Linux Open SUSE Command Line, type the following commands:

cal, more, less, cat, man, who, whatis, pwd, passwd
mkdir, cd, ls, rmdir, cp, rm, chmod
mv, clear

b) Using Linux Open SUSE Command Line, type the following commands:

vi name of the file
paste student1 student2 > student, cat student1 student2 > student
cut -f 3 student
sort -k 3 studentdata
join -a 1 -1 5 student faculty

2. Create and Submit a Word file **Lab4LinuxYourName.doc** which contains a good sample of output screenshots for every Linux Command. For this purpose, students should capture the screen display and use Paint to cut/past and submit the appropriate windows (and not the entire screen display) displaying the output for each command.

3. Introduction to Awk Program:

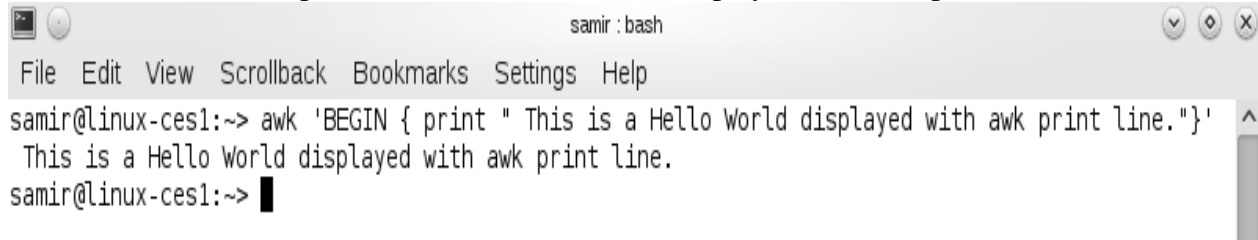
a) Using *vi* editor, create the following files: Student, Faculty, and Enrollment

S ID (N)	S Last (C)	S First (C)	S Class (C)	F Id (N)	S id (N)	Course no (C)	Grade (C)
1	Graham	Bill	JR	4	1	MIS 101	A+
2	Sanchez	Jim	EX	3	5	MIS 301	B-
3	White	Peter	EX	3	2	MIS 441	A-
4	Phelp	David	JR	1	3	CS 155	B-
5	Lewis	Sheila	SR	2	5	MIS 451	A+
6	James	Thomas	JR	1	4	MIS 551	B+
Student File					6	MIS 651	C+
F ID (N)	F Last (C)	F First (C)					
1	Robertson	Myra					
2	Smith	Neal					
3	Arlec	Lisa					
4	Fillipo	Paul					
Faculty File							
					3	MIS 301	B-
					4	MIS 441	A-
					4	CS 155	B-
					2	MIS 451	A+
					6	MIS 551	B+
					3	MIS 651	C+
					Enrollment File		

b) Introduction to **Awk** Program: Manipulate data files (fields and records) very efficiently, use variables, use arithmetic/logical operators, loops, and output data into a given format.

Three ways to execute **awk**:

- `awk 'BEGIN { print " This is a Hello World displayed with awk print line."}'`

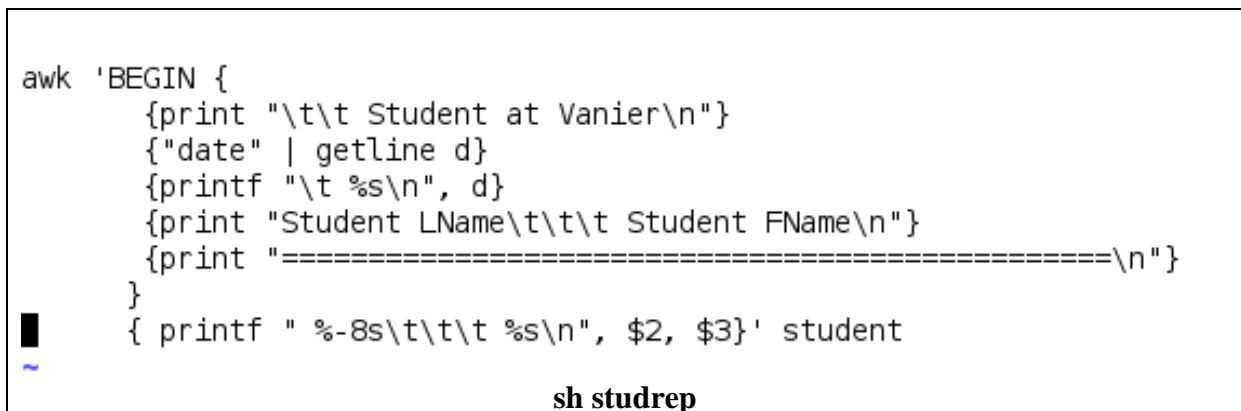


```
samir : bash
File Edit View Scrollback Bookmarks Settings Help
samir@linux-ces1:~> awk 'BEGIN { print " This is a Hello World displayed with awk print line."}'
This is a Hello World displayed with awk print line.
samir@linux-ces1:~>
```

- `awk '{ printf " %-8s\t %s\n", $2, $4}' student`

```
samir@linux-ces1:~/Review/Review2> awk '{-----}' student
Graham      JR
Sanchez      EX
White        EX
Phelp        JR
Lewis        SR
James        JR
samir@linux-ces1:~/Review/Review2>
```

- Using *vi*, write the **awk** program into text file to be named *studrep* as shown in Figure 1.



```
awk 'BEGIN {
    {print "\t\t Student at Vanier\n"}
    {"date" | getline d}
    {printf "\t %s\n", d}
    {print "Student LName\t\t\t Student FName\n"}
    {print "=====\n"}
}
~ { printf " %-8s\t\t\t %s\n", $2, $3}' student

sh studrep
```

Figure 1

In order to execute *studrep*, type in the command line **sh studrep**. You get the output shown in Figure 2.

```
samir@linux-ces1:~/Review/Review3> sh studrep
Student at Vanier

Tue Sep 27 22:02:5 EDT 2011
Student LName                               Student FName
=====
Graham                                       Bill
Sanchez                                    Jim
White                                       Peter
Phelp                                       David
Lewis                                       Sheila
James                                       Thomas
```

Figure 2

- c) Using *vi*, write an **awk** program to display *faculty*'s records as shown in Figure 3. Save the awk program into text file to be called *facultyreport*.

Faculty at Vanier			samir@linux-ces1:~/Review/Review4> sh sfacultyreport Students and Their Supervisors at Vanier		
Tue Sep 27 22:28:53 EDT 2011			Tue Sep 27 23:29:38 EDT 2011		
FacultyID	Faculty LName	Faculty FName	StudentLName	Student FName	Faculty LName
=====			=====		
1	Robertson	Myra	Phelp	David	Robertson
2	Smith	Neal	James	Thomas	Robertson
3	Arlec	Lisa	Lewis	Sheila	Smith
4	Fillipo	Paul	Sanchez	Jim	Arlec
samir@linux-ces1:~/Review/Review4> █			White	Peter	Arlec
Figure 3			Graham	Bill	Fillipo
			Figure 4		

- d) Using *vi*, write an **awk** program to display *student's* records, along with their corresponding faculty supervisors as shown in Figure 4. Save the **awk** program into text file *sfacultyreport*.
- e) Using *vi*, write an **awk** program (*Stud_Enro_Report*) to display *student's* grades records as shown in Figure 5.

samir@linux-ces1:~/Review/Review4> sh Stud_Enro_Report Students and Their Marks at Vanier			
Tue Oct 11 02:57:06 EDT 2011			
StudentLName	Student FName	CourseNum	Grade
=====			
Graham	Bill	MIS101	A+
Sanchez	Jim	MIS441	A-
Sanchez	Jim	MIS451	A+
White	Peter	CS155	B-
White	Peter	MIS301	B-
White	Peter	MIS651	C+
Phelp	David	CS155	B-
Phelp	David	MIS441	A-
Phelp	David	MIS551	B+
Lewis	Sheila	MIS301	B-
Lewis	Sheila	MIS451	A+
James	Thomas	MIS551	B+
James	Thomas	MIS651	C+
Figure 5			

- f) Using *vi*, write an **awk** program (*Stud_Enro_fac1Report*) to display *student's* records, along with their corresponding faculty supervisors as shown in Figure 6.

```

samir@linux-ces1:~/Review/Review4> sh Stud_Enro_fac1Report
Students and Their Marks, with Name of their Supervisors at Vanier

Tue Oct 11 04:09:53 EDT 2011
StudentLName      Student FName      CourseNum      Grade      FacLName      FacFName
=====
Phelp             David              CS155           B-         Robertson     Myra
Phelp             David              MIS441          A-         Robertson     Myra
Phelp             David              MIS551          B+         Robertson     Myra
James             Thomas             MIS551          B+         Robertson     Myra
James             Thomas             MIS651          C+         Robertson     Myra
Lewis             Sheila             MIS301          B-         Smith          Neal
Lewis             Sheila             MIS451          A+         Smith          Neal
Sanchez           Jim                MIS441          A-         Arlec          Lisa
Sanchez           Jim                MIS451          A+         Arlec          Lisa
White             Peter              CS155           B-         Arlec          Lisa
White             Peter              MIS301          B-         Arlec          Lisa
White             Peter              MIS651          C+         Arlec          Lisa
Graham           Bill               MIS101          A+         Fillipo        Paul

```

Figure 6

- g) Using *vi*, write the following records into their corresponding files *publisher* and *book*. Then, write an **awk** program to display *publisher*, *book's* records, along with their corresponding publishers as shown in Figure 7. Save the **awk** program into text files *PublisherReport*, and *BookReport*.

publisher			PRIMARY KEY (p_id)		
p_id (N)	p_name (C)	p_address (C)			
1	Course_Technology	13_Ontario_Street_Canada			
2	Campus_Press_Educ	21_Durocher_Avenue_Quebec			
3	Pearson_Education	45_New_York_USA			
4	Harvard_Publishing	New_Hamphshir_Boston			
5	MIT_Publishing_Edu	32_Square_Paule_Boston_USA			

book						PRIMARY KEY (b_id)		FOREIGN KEY (p_id)	
b_id (N)	b_author (C)	b_title (C)	b_isbn (C)	b_type (C)	b_price (N)	p_id (N)			
1	Stev_Jeff	Java_Programming	1234987	BG	42.4	4			
2	Amine_Khan	Oracle_Database	345675	EX	252.4	1			
3	Eduard_Becker	History_of_Art	098766	EX	202.3	5			
4	James_Peter	PHP_Programming	765432	MD	66.7	2			
5	Paul_Tremblay	Economy_and_Wealth	1209845	BG	43.3	3			
6	Paul_Henry	Business_principles	654321	BG	12.6	4			


```

samir@linux-ces1:~/Review/Review3> sh PublisherReport
Publisher at Vanier

Wed Sep 28 03:50:10 EDT 2011
PublisherID      Publisher Name      Publisher Address
=====
1                Course_Technology   13_Ontario_Street_Canada
2                Campus_Press_Educ   21_Durocher_Avenue_Quebec
3                Pearson_Education   45_New_York_USA
4                Harvard_Publishing  New_Hamphshir_Boston
5                MIT_Publishing_Edu  32_Square_Paule_Boston_USA

```

```

samir@linux-ces1:~/Review/Review3> sh BookReport
List of Books

Wed Sep 28 04:05:25 EDT 2011
Book ID      Book Author      Book Title      Book Price
=====
1            Stev_Jeff        Java_Programming      42.40
2            Amine_Khan       Oracle_Database       252.40
3            Eduard_Becker    History_of_Art        202.30
4            James_Peter      PHP_Programming       66.70
5            Paul_Tremblay    Economy_and_Wealth    43.30
6            Paul_Henry       Business_principles   12.60

```

Figure 7

- h) Using *vi*, edit the three following files *Dept*, *Employee*, and *Position*, and write an **awk** program to be named *EmployeeReport* to display *employee*'s records as shown in Figure 8.

DeptId	DeptName	Location	EmployeeId	Lname	Fname	PositionId	Salary	DeptId
10	Finance	Charlotte	111	Amine	John	1	265000	10
20	InfoSys	New-York	246	Houston	Larry	2	150000	40
30	Sales	Woodbridge	123	Roberts	Sandi	2	75000	10
40	Marketing	Los-Angeles	433	McCall	Alex	3	66500	20
Dept File			543	Dev	Derek	2	80000	20
PositionId	PosDesc							
1	President							
2	Manager							
3	Programmer							
4	Accountant							
5	Salesman							
Position File			200	Shaw	Jinku	5	24500	30
			135	Garner	Stanly	2	45000	30
			222	Roberts	Sunny	4	35000	10
			Employee File					

List of all Employees

Fri Oct 28 20:55:12 EDT 2011			
EmplID	EmployeeLName	EmployeeFName	Salary
111	Amine	John	265000
246	Houston	Larry	150000
123	Roberts	Sandi	75000
433	McCall	Alex	66500
543	Dev	Derek	80000
200	Shaw	Jinku	24500
135	Garner	Stanly	45000
222	Roberts	Sunny	35000

Figure 8

- i) Using *vi*, write an **awk** program (*Emp_Dept_Report*) to display *employee* records and their departmental affiliation as shown in Figure 9.

List of all Employees and Their Departmental Affiliation					
Sat Oct 29 04:48:42 EDT 2011					
EmplID	EmployeeLName	EmployeeFName	Salary	Department	Location
111	Amine	John	265000	Finance	Charlotte
123	Roberts	Sandi	75000	Finance	Charlotte
222	Roberts	Sunny	35000	Finance	Charlotte
433	McCall	Alex	66500	InfoSys	New-York
543	Dev	Derek	80000	InfoSys	New-York
135	Garner	Stanly	45000	Sales	Woodbridge
200	Shaw	Jinku	24500	Sales	Woodbridge
246	Houston	Larry	150000	Marketing	Los-Angeles

Figure 9

- j) Using *vi*, write an **awk** program (*Emp_Dept_Pos_Report*) to display *employee* records and their departmental affiliation along with their position's description as shown in Figure 10.

List of all Employees and Their Departmental Affiliation & Position						
Sat Oct 29 04:48:42 EDT 2011						
EmplID	EmployeeLName	EmployeeFName	Salary	Department	Location	Position
111	Amine	John	265000	Finance	Charlotte	President
246	Houston	Larry	150000	Marketing	Los-Angeles	Manager
135	Garner	Stanly	45000	Sales	Woodbridge	Manager
123	Roberts	Sandi	75000	Finance	Charlotte	Manager
543	Dev	Derek	80000	InfoSys	New-York	Manager
433	McCall	Alex	66500	InfoSys	New-York	Programmer
222	Roberts	Sunny	35000	Finance	Charlotte	Accountant
200	Shaw	Jinku	24500	Sales	Woodbridge	Salesman

Figure 10