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**UNIX File System & Permissions**

**1: Give the execute permission for the user for a file chap1.**

**Ans**: chmod u+x chap1

**2: Give execute permission for user, group and others for a file add.c**

**Ans**: chmod a+x add.c

**3: Remove the execute permission from user, give read permission to group and others for a file aa.c**

**Ans:** chmod u-x,g+r,o+r aa.c

**4: Give execute permission for users for a.c, kk.c, nato and myfile using single command.**

**Ans:** chmod u+x a.c kk.c nato myfile

**5: Change the directory to root directory. Check the system directories, like bin, etc, usr etc.**

1. Ans: Change to the root directory: cd /

2. List the contents of the root directory to see the system directories: ls

**Using Pipes and Filters**

**1: Redirect the content of the help document ls, into a file called as lsdoc.**

**Ans: man ls > lsdoc**

**2: Display the content of the lsdoc page wise.**

**Ans: less lsdoc**

**3: Display only the first 4 lines of the lsdoc file.**

**Ans: head -n 4 lsdoc**

**4: Display only the last 7 lines of the file lsdoc.**

**Ans: tail -n 7 lsdoc**

**5: Remove the file lsdoc.**

**Ans: rm lsdoc**

**6: There will be B’day celebration from the friends file, find how many B’day parties**

**will be held. If two of the friends have the B’date on the same day, then we will be**

**having one party on that day.**

**Ans:1. Basic = sort friends | uniq | wc -l**

**2.If specific dates are given= cut -d ' ' -f 2 friends | sort | uniq | wc -l**

**7: Display the lines starting with Ma, in the file friends.**

**Ans: grep '^Ma' friends**

**8: Display the lines starting with Ma, ending with i or ending with id, in the file friends.**

**Ans: grep '^Ma.\*\(i\|id\)$' friends**

**9: Print all the files and the directory files from the current directory across all the sub directories, along with its path**

**Ans: find . -print**

**10: Print only the Directory files.**

**Ans: find . -type d -print or ls -R | grep ':$'**

**11: Display the files starting with chap, along with its path.**

**Ans: find . -type f -name 'chap\*' -print**

**12: Sort the file friends in ascending order of names.**

**Ans: sort friends -o friends\_sorted**

**13: Display the contents of the file friends in uppercase letters.**

**Ans: cat friends | tr '[:lower:]' '[:upper:]'**

**14: Store the contents of your home directory in a file called dir.**

**Ans: ls ~ > dir**

**15: From the above file dir, display the file permissions and the name of the file only.**

**1. Ans: List the contents of your home directory with detailed information and store it in dir: ls -l ~ > dir**

**2. Extract the file permissions and file names from the dir file: awk '{print $1, $9}' dir**

**16: From the same dir file, store only the file names in a file called files.**

**Ans: cat dir | awk '{print $9}' | grep -v '^$' > files**

**17: From the same dir file, store only the permissions of files in a file called perms.**

**Ans: cat dir | awk '{print $1}' | grep -v '^$' > perms**

**18: From the same dir file, store only the file sizes in a file called sizes.**

**Ans: cat dir | awk '{print $5}' | grep -v '^$' > sizes**

**19: Display the file names, sizes and permissions from your directory in that order.**

**Ans: ls -l | awk '{print $9, $5, $1}'**

**20: Display the number of users working on the system.**

**Ans: who | wc -l**

**21: Find out the smallest file in your directory.**

**Ans: ls -lS | grep '^-' | tail -n 1**

**22: Display the total number of lines present in the file friends.**

**Ans: wc -l friends**

**23: Create the following fixed record format files (with “|” delimiter between fields) with the structure given below, and populate them with relevant data use these files to solve following questions**

**emp.lst: Empid(4),Name(18),Designation(9),Dept(10),Date of Birth(8),Salary(5)**

**dept.lst: Dept.Code (2), Name (10), Head of Dept’s id(4)**

**desig.lst: Designation Abbr.(2), Name (9)**

**Ans:**

**Create emp.lst file: echo -e "1001|John Doe |Manager |Sales |19800101|50000\n1002|Jane Smith |Developer|IT |19850215|45000\n1003|Emily Johnson |Analyst |Finance |19900322|40000" > emp.lst**

**Create dept.lst file: echo -e "01|Sales |1001\n02|IT |1002\n03|Finance |1003" > dept.lst**

**Create design.lst file: echo -e "MG|Manager \nDV|Developer\nAN|Analyst " > desig.lst**

1. **Find the record lengths of each file.**

**Ans: Find the record length of** emp.lst: head -n 1 emp.lst | wc -c

**Find the record length of** dept.lst: head -n 1 dept.lst | wc -c

**Find the record length of** desig.lst**:** head -n 1 desig.lst | wc -c

1. **Display only the date of birth and salary of the last employee record.**

**Ans: tail -n 1 emp.lst | awk -F '|' '{print $5, $6}'**

**3. Extract only employee names and designations. (Use column specifications).**

**Save output as cfile1.**

**Ans: cut -c 6-23,25-33 emp.lst > cfile1**

**4. Extract Emp.id, dept, dob and salary. (Use field specifications). Save output as**

**cfile2.**

**Ans: cut -d '|' -f 1,4,5,6 emp.lst > cfile**

**5. Fix the files cfile1 and cfile2 laterally, along with the delimiter.**

**Ans: paste -d ' | ' cfile1 cfile2 > combined\_file**

**6. Sort the emp.lst file in reverse order of Emp. Names.**

**Ans: sort -t '|' -k 2,2r emp.lst -o emp.lst**

**7. Sort the emp.lst file on the salary field, and store the result in file srtf.**

**Ans: sort -t '|' -k 6,6n emp.lst -o srtf**

**8. Sort the emp.ls t file on designation followed by name.**

**Ans: sort -t '|' -k 3,3 -k 2,2 emp.lst -o emp\_sorted.lst**

**9. Sort the emp.lst file on the year of birth.**

**Ans: sort -t '|' -k 5.1,5.4 emp.lst -o emp\_sorted\_by\_dob.lst**

**10. Find out the various designations in the employee file. Eliminate duplicate**

**listing of designations.**

**Ans: cut -d '|' -f 3 emp.lst | sort | uniq**

**11. Find the non-repeated designation in the employee file.**

**Ans: cut -d '|' -f 3 emp.lst | sort | uniq -u**

**12. Find the number of employees with various designations in the employee file.**

**Ans: cut -d '|' -f 3 emp.lst | sort | uniq -c**

**13. Create a listing of the years in which employees were born in, along with**

**number of employees born in that year.**

**Ans: cut -d '|' -f 5 emp.lst | cut -c 1-4 | sort | uniq -c**

**14. Use nl command to create a code table for designations to include designation**

**code (Start with dept. code 100, and subsequently 105, 110 …).**

**Ans: 1. Extract unique designations and save to a temporary file: cut -d '|' -f 3 emp.lst | sort | uniq > designations.tmp**

**2. Use the nl command to create the code table: nl -v 100 -i 5 designations.tmp > designation\_codes.lst**

**24: PCS has its offices at Pune, TTC and Mumbai. The employees’ data is stored**

**separately for each office. Create appropriate files (with same record structure as**

**in previous assignment) and populate with relevant data.**

1. **Create pune\_emp.lst file:** echo -e "1001|John Doe |Manager |Sales |19800101|50000\n1002|Jane Smith |Developer|IT |19850215|45000\n1003|Emily Johnson |Analyst |Finance |19900322|40000" > pune\_emp.lst
2. **Create ttc\_emp.lst file:** echo -e "2001|Alice Brown |Manager |HR |19791230|55000\n2002|Bob White |Developer|IT |19860410|47000\n2003|Charlie Black |Analyst |Finance |19910505|42000" > ttc\_emp.lst
3. **Create mumbai\_emp.lst file:** echo -e "3001|David Green |Manager |Marketing |19820315|53000\n3002|Eve Blue |Developer|IT |19870725|46000\n3003|Frank Yellow |Analyst |Finance |19921212|41000" > mumbai\_emp.lst
4. **List details about an employee ‘Manu Sharma’ in the Mumbai office.**

**Ans: grep 'Manu Sharma' mumbai\_emp.lst**

1. **List only the Emp.Id. And Dept. of Manu Sharma.**

**Ans: grep 'Manu Sharma' mumbai\_emp.lst | awk -F '|' '{print $1, $4}**

1. **List details of all managers in all offices. (O/P should not contain file names.).**

**Ans: grep 'Manager' pune\_emp.lst ttc\_emp.lst mumbai\_emp.lst**

**To check file:**

**cat pune\_emp.lst ttc\_emp.lst mumbai\_emp.lst | grep 'Manager'**

1. **Find the number of S.E. in each office.**

**1. Count the number of S.E. in Pune office: grep 'S.E.' pune\_emp.lst | wc -l**

**2. Count the number of S.E. in TTC office: grep 'S.E.' ttc\_emp.lst | wc -l**

**3. Count the number of S.E. in Mumbai office: grep 'S.E.' mumbai\_emp.lst | wc -l**

**5. List only the Line Numbers and Employee names of employees in ‘H/W’ in**

**Pune file.**

**Ans: grep -n 'H/W' pune\_emp.lst | awk -F '|' '{print $1, $2}'**

**6. Obtain a listing of all employees other than those in ‘HR’ in the Mumbai file**

**and save contents in a file ‘nonhr’.**

**Ans: grep -v 'HR' mumbai\_emp.lst > nonhr**

**7. Find the name and designation of the youngest person who is not a manager.**

**Ans: grep -v 'Manager' emp.lst | sort -t '|' -k 5,5r | head -n 1 | awk -F '|' '{print $2, $3}'**

**8. Display only the filename(s) in which details of employee by the name**

**‘Seema Sharma’ can be found.**

**Ans: grep -l 'Seema Sharma' pune\_emp.lst ttc\_emp.lst mumbai\_emp.lst**

**9. Locate the lines containing saxena and saksena in the Mumbai office.**

**Ans: grep -i -E 'saxena|saksena' mumbai\_emp.lst**

**10. Find the number of managers who earn between 50000 and 99999 in the Pune**

**office.**

**Ans: grep 'Manager' pune\_emp.lst | awk -F '|' '$6 >= 50000 && $6 <= 99999' | wc -l**

**11. List names of employees whose id is in the range 2000 – 2999: in Pune**

**Office; in all offices.**

**Ans: 1.For pune office : grep -E '^200[0-9]|^2999' pune\_emp.lst | awk -F '|' '{print $2}'**

**2.For All offices: grep -E '^200[0-9]|^2999' pune\_emp.lst ttc\_emp.lst mumbai\_emp.lst | awk -F '|' '{print $2}'**

**12. Locate people having same month of birth as current month in Pune office.**

**Get the current month:**

**current\_month=$(date +%m)**

**Find employees with the same month of birth:**

**grep "|....${current\_month}" pune\_emp.lst**

**13. List details of all employees other than those of HR and Admin in file F1.**

**Ans: grep -v -E 'HR|Admin' emp.lst > F1**

**14. Locate for all Dwivedi, Trivedi, Chaturvedi in Pune file.**

**Ans: grep -E 'Dwivedi|Trivedi|Chaturvedi' pune\_emp.lst**

**15. Obtain a list of people in HR, Admin and Recr. depts. sorted in reverse order**

**of the dept.**

**Ans: grep -E 'HR|Admin|Recr' emp.lst | sort -t '|' -k 4,4r**

**25: Write a command sequence that prints out date information in this order: time,**

**day of week, day number, month, year :**

**13:44:42 IST Sun 16 Sept 1994**

**Ans: date +"%T %Z %a %d %b %Y"**

**26: Write a command sequence that prints the names of the files in the current**

**directory in the descending order of number of links.**

**Ans: ls -l | sort -k2,2nr | awk '{print $9}'**

**27: Write a command sequence that prints only names of files in current working**

**directory in alphabetical order.**

**Ans: ls -1p | grep -v / | sort**

**28: Write a command sequence to print names and sizes of all the files in current**

**working directory in order of size.**

**Ans: ls -lS | awk '{print $5, $9}'**

**29: Determine the latest file updated by the user.**

**Ans: ls -lt | head -n 2**

**file updated by the user.**