

SAVITIBAI PHULE UNIVERSITY OF PUNE
M.Sc. (Computer Science) Part I Semester II
Practical Examination 2019-2020
SUBJECT: Advanced OS & Mobile Technologies Practical(CSUP125)
Time: 3 hours **Max. Marks: 70**

- Q.1 A) Write an Android Program to demonstrate Activity life Cycle [10]
- B) Create table Customer (id, name, address, phno). Create Android Application for performing the following operation on the table. (usingsqlite database)
- i) Insert New Customer Details.
- ii) Show All the Customer Details [20]
- Q.2 A) Write a C program to find whether a given file is present in current directory or not. [10]
- B) Write a C program which blocks SIGQUIT signal for 5 seconds. After 5 second process checks any occurrence of quit signal during this period, if so, it unblock the signal. Now another occurrence of quit signal terminates the program. (Use sigprocmask() and sigpending()) [20]
- Q.3 Viva [10]

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- Q.1. A) Create an Android Application that will change color of the screen and change the font size of text view using xml. [10]
- B) Write an IOS application to implement UI elements like Pickers [20]
- Q.2 A) Write a C program that a string as an argument and return all the files that begins with that name in the current directory. For example > ./a.out foo will return all file names that begins with foo.[10]
- B) Write a C program to demonstrates the different behavior that can be seen with automatic, global, register, static and volatile variables (Use setjmp() and longjmp() system call). [20]
- Q.3 Viva [10]

- Q.1 A) Create an Android Application to accept two numbers and create two buttons (power and Average). Display the result on the next activity on Button click [10]

B) Create an Android Application to perform following string operation according to user selection of radio button.



[20]

- Q.2 A) Write a C program to find file properties such as inode number, number of hard link, File permissions, File size, File access and modification time and so on of a given file using stat() system call. [10]

B) Write a C program to create 'n' child processes. When all 'n' child processes terminates, Display total cumulative time children spent in user and kernel mode. [20]

- Q.3 Viva [10]

- Q.1 A) Create a Simple Android Application Which Send —Hello! message from one activity to another with help of Button (Use Intent). [10]
- B) Write an IOS application to implement UI elements like TableView and selected item of the TableView is displayed in the second view. [20]
- Q.2 A) Write a C program to find file properties such as inode number, number of hard link, File permissions, File size, File access and modification time and so on of a given file using fstat() system call. [10]
- B) Write a C program to implement the following unix/linux command (use fork, pipe and exec system call). Your program should block the signal Ctrl-C and Ctrl-\ signal during the execution.
 ls -l | wc -l [20]
- Q.3 Viva [10]

- Q.1 A) Write an Android Program to Change the Image Displayed on the Screen [10]
 B) Write an IOS application that toggles a light bulb on and off when the user clicks on switch button [20]
- Q.2 A) Write a C program to create an unnamed pipe. The child process will write following three messages to pipe and parent process display it.
- Message1 = "Hello World"
Message2 = "Hello SPPU"
Message3 = "Linux is Funny" [10]
- B) Write a C program to read all txt files (that is files that ends with .txt) in the current directory and merge them all to one txt file and returns a file descriptor for the new file [20]
- Q.3 Viva [10]

Q.1 A) Write an Android code to complete the following Array/List operations

1. Union

2. Intersection

List 1

List 2

Ans

☐ Union ☐ Intersection

[10]

B) Java Android Program to demonstrate login form with validation.

[20]

Q.2 A) Write a C program to map a given file in memory and display the contain of mapped file in reverse.

[10]

B) Write a C program that behaves like a shell (command interpreter). It has its own prompt say "NewShell\$". Any normal shell command is executed from your shell by starting a child process to execute the system program corresponding to the command. It should additionally interpret the following command.

- i) list f<dirname> - print name of all files in directory
- ii) list n <dirname> - print number of all entries
- iii) list i<dirname> - print name and inode of all files

[20]

Q.3 Viva

[10]

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Q.1 A) Write a Swift program to change the first and last character of a given string. [10]

 B) By using Spinner, Buttons. Write a Android program to draw following GUI.

The image shows a GUI layout for an Android application. At the top, there is a text label "Enter Item:" followed by a text input field containing the word "Apple". Below this, there are two buttons: "Add to spinner" and "Remove from spinner". Further down, there is a text label "See Response Below". At the bottom, there is a spinner widget displaying the word "Apple" and a downward-pointing triangle icon.

[20]

Q.2 A) Write a C program to create a file with hole in it. [10]

 B) Write a C program which display the information of a given file similar to given by the unix /linux command on current directory (i.e File Access permission, file name, file type, User id, group id, file size, file access and modified time and so on)

ls -l <filename>

 DO NOT simply exec ls -l <filename> or system command from the program. [20]

Q.3 Viva [10]

Q.1 A) Write an Android program to read 5 numbers and print the sum of all

List 1

Ans

☐ Sum ☐ Avg [10]

B) Create a Notification in Android and display the notification message on second activity [20]

Q.2 A) Write a C program to get and set the resource limits such as files, memory associated with a process.

[10]

B) Write a C program which receives file names as command line arguments and display those filenames in ascending order according to their sizes.
(e.g \$ a.out a.txt b.txt c.txt, ...) [20]

Q.3 Viva [10]

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- Q.1 A) Write a Swift program that accept two integer values and return true if one of them is 20 or if their sum is 20. [10]
- B) Write an Android Application to demonstrate Alert Dialog Box. [20]
- Q.2 A) Write a C program to display as well as resets the environment variable such as path, home, root etc. [10]
- B) Write a C program that will only list all subdirectories in alphabetical order from current directory. [20]
- Q.3 Viva [10]

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- Q.1 A) Create an Android Application to display satellite view of current location using Google Map. [10]
- B) Construct an Android Application to display the images using ImageSwitcher [20]
- Q.2 A) Write a C program to display statistics related to memory allocation system. (Use mallinfo() system call). [10]
- B) Write a C program which creates two files. The first file should have read and write permission to owner, group of owner and other users whereas second file has read and write permission to owner (use umask() function). Now turn on group-id and turn off group execute permission of first file. Set the read permission to all user for second file (use chmod() function). [20]
- Q.3 Viva [10]

- Q.1 A) Write a Swift program to compute the sum of the two integers. If the values are equal return the triple their sum. [10]
- B) Construct an Android Application to accept a number and calculate Factorial and Sum of Digits of a given number using Menu. [20]
- Q.2 A) Write a C program to create variable length arrays using alloca() system call. [10]
- B) Write a C program that behaves like a shell (command interpreter). It has its own prompt say "NewShell\$". Any normal shell command is executed from your shell by starting a child process to execute the system program corresponding to the command. It should additionally interpret the following command.
- i) count c <filename> - print number of characters in file
 - ii) count w <filename> - print number of words in file
 - iii) count l <filename> - print number of lines in file [20]
- Q.3 Viva [10]

- Q.1 A) Write an Android program to perform Zoom In, Zoom Out operation and display Satellite view, on Google Map. [10]
- B) Create an Android application, where the user can enter player name and points in one view and display it in another view. [20]
- Q.2 A) Write a C program to send SIGALRM signal by child process to parent process and parent process make a provision to catch the signal and display alarm is fired.(Use Kill, fork, signal and sleep system call) [10]
- B) Write a C program to display all the files from current directory and its subdirectory whose size is greater than 'n' Bytes Where n is accepted from user through command line. [20]
- Q.3 Viva [10]

- Q.1 A) Write a Swift program to create a new string where all the character "a" have been removed except the first and last positions. [10]
- B) Create table Company (id, name, address, phno). Create Android Application for performing the following operation on the table.(using sqlite database)
- i) Insert New Company Details.
- ii) Show All the Company Details. [20]
- Q.2 A) Write a C program that redirects standard output to a file output.txt. (use of dup and open system call). [10]
- B) Write a C program that behaves like a shell (command interpreter). It has its own prompt say "NewShell\$". Any normal shell command is executed from your shell by starting a child process to execute the system program corresponding to the command. It should additionally interpret the following command.
- i) typeline +10 <filename> - print first 10 lines of file
- ii) typeline -20 <filename> - print last 20 lines of file
- iii) typeline a <filename> - print all lines of file [20]
- Q.3 Viva [10]

Q.1 A) Construct an Android app that toggles a light bulb on and off when the user clicks on toggle button

[10]

B) Construct an Android application to accept a number and calculate Armstrong and Perfect number of a given number using Menu.

[20]

Q.2 A) Write a C program to create an unnamed pipe. Write following three messages to pipe and display it.

Message1 = "Hello World"

Message2 = "Hello SPPU"

Message3 = "Linux is Funny"

[10]

B) Write a C program that behaves like a shell (command interpreter). It has its own prompt say "NewShell\$". Any normal shell command is executed from your shell by starting a child process to execute the system program corresponding to the command. It should additionally interpret the following command.

- i) search f <pattern><filename> - search first occurrence of pattern in filename
- ii) search c <pattern><filename> - count no. of occurrences of pattern in filename
- iii) search a <pattern><filename> - search all occurrences of pattern in filename

[20]

Q.3 Viva

[10]

Q.1 A) Write an Android code to merge given two Array/List

List 1	<div style="border: 1px solid orange; width: 200px; height: 15px;"></div>
List 2	<div style="border: 1px solid orange; width: 200px; height: 15px;"></div>
List 3	<div style="border: 1px solid orange; width: 200px; height: 15px;"></div>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">Merge</div>	

[10]

B) Write an Android Application to send Email.

[20]

Q.2 A) Write a C program to Identify the type (Directory, character device, Block device, Regular file, FIFO or pipe, symbolic link or socket) of given file using stat() system call. [10]

B) Write a C program which creates a child process and child process catches a signal SIGHUP, SIGINT and SIGQUIT. The Parent process send a SIGHUP or SIGINT signal after every 3 seconds, at the end of 15 second parent send SIGQUIT signal to child and child terminates by displaying message "My Papa has Killed me!!!". [20]

Q.3 Viva

[10]

- Q.1 A) Create a Simple Android Application Which Send —Hello message from one activity to another with help of Button (Use Intent). [10]
- B) Create an Android application which will ask the user to input his name and a message, display the two items concatenated in a label, and change the format of the label using radio buttons and check boxes for selection, the user can make the label text bold, underlined or italic and change its color .include buttons to display the message in the label, clear the text boxes and label and then exit. [20]
- Q.2 A) Write a C program that catches the ctrl-c (SIGINT) signal for the first time and display the appropriate message and exits on pressing ctrl-c again. [10]
- B) Write a C program to implement the following unix/linux command on current directory
 ls -l > output.txt
 DO NOT simply exec ls -l > output.txt or system command from the program. [20]
- Q.3 Viva [10]

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- Q.1 A) Write a Swift program to find the Factorial of a given Number. [10]
- B) Write a PhoneGap Application to display Hello World using HTML5. [20]
- Q.2 A) Write a C program to display the given message ‘n’ times. (make a use of setjmp and longjmp system call) [10]
- B) Write a C program to display all the files from current directory which are created in a particular month. [20]
- Q.3 Viva [10]

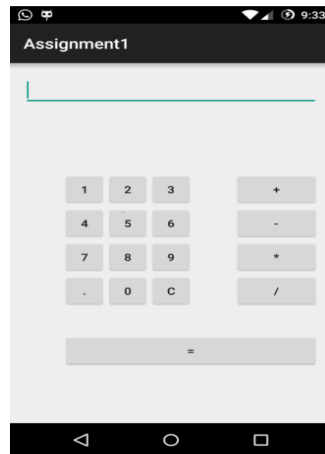
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- Q.1 A) Write an Android Program to Demonstrate Date Picker Dialog in Android [10]
 B) Write a PhoneGap Application to display Digital Bio Data using HTML5. [20]
- Q.2 A) Write a C program to display the last access and modified time of a given file. [10]
 B) Write a C program to implement the following unix/linux command (use fork, pipe and exec system call). Your program should block the signal Ctrl-C and Ctrl-\ signal during the execution.
 ls -l | wc -l [20]
- Q.3 Viva [10]

- Q.1 A) Create an Android application that will change color of the screen and change the font size of text view using xml. [10]
- B) Create table Project(id,name,dept,city). Create Application to perform the following operations.(usingsqlite database)
- i) Add records.
- ii) Display all the records. [20]
- Q.2 A) Write a C program to move the content of file1.txt to file2.txt and remove the file1.txt from directory. [10]
- B) Write a C program which creates a child process to run linux/ unix command or any user defined program. The parent process set the signal handler for death of child signal and Alarm signal. If a child process does not complete its execution in 5 second then parent process kills child process. [20]
- Q.3 Viva [10]

- Q.1 A) Write an Android application to accept two numbers from the user, and displays them, but reject input if both numbers are greater than 10 and asks for two new numbers. [10]

B) Create the simple calculator shown below also perform appropriate operation



[20]

- Q.2 A) Write a C program that print the exit status of a terminated child process. [10]

B) Write a C program that will read a directory containing a set of files, create a new sub directory called “backup” in same directory and copy all the files from directory to the new sub directory “backup”. You are supposed to use exec() with “cp” command. (Create child processes that can execute each of the cp commands to copy the file from directory to subdirectory “backup”)

[20]

- Q.3 Viva [10]