Multiple choice questions. Each question is worth 3 points.

1) Which of the following statement is **True** about the pointers?
   a) To reach the memory location variables, arrays...etc use at (at) operator
   b) $a will give the address of the int a
   c) It is possible to create a pointer of pointer
   d) The size of a double pointer and char pointers are different

2) Which of the following statement is **True** about the memory blocks?
   a) The stack segment is used to store the global variables
   b) The code segment is used to store local variables
   c) The stack segment is used for dynamic memory allocation
   d) The data segment is used to store the function's data such as global and static variables

3) _____ keeps on reading until it sees a newline character. Thus, it is sensitive to Buffer Overflow attacks.

   a) gets
   b) fgets
   c) puts
   d) fputs

4) Which of the following is a non-negative integer number that uniquely identifies an open file in Unix
   a) File Permission Mode
   b) File Descriptor
   c) File Buffer Cache
   d) File I-node

5) _____ is way to use standard I/O library to open a file for read-only purpose.
   a. fopen("listing.csv","rw")
   b. fopen("listing.csv", "r+")
   c. open("listing.cvs", O_RDONLY)
   d. open("listing.cvs", readonly=true)

6) A single _____ may contains multiple _____
   a. thread, processes
   b. thread, executions
   c. process, threads
   d. thread, tasks

7) You can display various processes that are currently running in the background using the _____ command

   a) bg
   b) jobs
   c) fg
   d) ps

8) Which of the following approach is **not used** to deal with the deadlocks?

   a) Deadlock Repetition
   b) Deadlock Prevention
   c) Deadlock Avoidance
   d) Deadlock Detection

9) Race condition and Deadlock are _____ issues

    a. concurrency
    b. reliability
    c. power-efficiency
    d. security

10) Which of the following is **not an element** of a process?

    a) Identifier
    b) State
    c) Program Counter
    d) Emulator

11) Which of the following function replaces the current process image with a new process image?

    a) execl
    b) mv
    c) wait
    d) change_pimage()

12) What will be the output of the following program?

```
int main()
{   float f = 5.44;
    int m = f;
    m += 0.56;
    f = m;
    printf("%f", f);
}
```

a) 5.0
b) 6.0
c) 5.44
d) 5.56

13) What will be the output of the following program?

```
int main()
{
    int a = 10, b, c;
    b = --a;
    c = a--;
    printf("%d %d %d",a,b,c);
    return 0;
}
```

a = 10
b = a 11
c = a

a) 8 9 9
b) 8 8 9
c) 8 9 10
d) 8 8 8

14) Which of the following is **NOT** a Linux distribution
   a. Ubuntu
   b. Windows Subsystem for Linux
   c. Centos
   d. Red Hat

15) You can execute a program in the background by typing the program name followed by the symbol _____ at the end
   a) >>
   b) |
   c) ~
   d) &

16) Which of the following state does **not** exist for the Linux environment processes?
   a) Suspended
   b) Background
   c) Underground
   d) Foreground

17) If we have multiple processes and they compute for the same resource, it will permanently block the processes, and this is called_____
   a) Spinlock
   b) Deadlock
   c) Zombie Processes
   d) Race Condition

18) Which process is the winner of the race condition?
a) The process which is created first
b) The process which is created last
c) The slower process
d) The faster process

To avoid race conditions, mutual exclusion must be enforced within critical sections.

19) Which of the following function takes the arguments as a vector?
a) execvpe
b) execle
c) execlp
d) execlstruct

20) Which of the following system calls returns the process id of the current process?
a) getid()
b) getpid()
c) getppid()
d) pid()

21) What is the role of the following command?

```
fg %1
```

a) Brings the first process in the list to the foreground
b) Waits the child process for 1 second
c) Suspends the execution of the process whose id is 1
d) Reduces the processor power 1 percent

stack
heap
date
Tew

22) Local variables are stored in the _____ section of the memory
a) Heap
b) Data
c) Stack
d) Local

23) Which of the following mechanism is not used to provide concurrency in UNIX?
a) Pipes
b) Signals
c) Semaphores
d) Symbolic Links

24) Which of the following statement is **not** True?
a) `fork()` creates a new process by duplicating the calling process
b) The calling process is referred to as the parent process
c) If the `fork()` call is successful, then a unique process ID will be assigned to the child process
d) If the `fork()` call is successful, then it returns 0 to the parent process.

25) What is the correct format specifier often used to print integers?

a) %d
b) %s
c) %c
d) %f

26) There are special background processes that are started at system startup and they continue to run till the system is shutdown. These special background processes are called _____ ?

a) Angels
b) Threads
c) Zombies
d) Daemons

27) Which of the following statement is **not True** about the deadlocks?

a) There is no single effective strategy that can deal with all types of deadlock
b) It is the temporary blocking of a set of processes
c) All deadlocks involve conflicting needs for resources by two or more processes
d) It usually occurs when the processes compete for system resources or communicate with each other

28) _____ is used to indicate that the pointer **doesn't** point to a valid location.

a) Free
b) Void
c) Null
d) Vacant

29) Which of the following command reads from the input.txt file and appends to the output.txt file?

a) ./myprog > input.txt >> output.txt
b) ./myprog < input.txt >> output.txt
c) ./myprog > input.txt 2> output.txt
d) None of the above

30) Which data structure is used to store file information in the Unix systems?
- a) Arrays
- b) Linked List
- c) Struct
- d) Stack

True/False Questions. Each question is worth 1 point

Statement	True	False
31) If the child process exits before the parent process completes its execution and terminates, the child process will become a zombie process	✓	
32) A cloud is an interface between the user and the kernel.		✓
33) To change access modes on files you can use the modChange() command.		✓
34) Heap part of the memory is dynamically allocated as needed	✓	
35) The parent id of a child is called ppid	✓	
36) Process switching needs interaction with operating system	✓	
37) The exec() system call will create a child process		✓
38) Processes may share the resources	✓	
39) Unix is derived from Linux		✓
40) User mode is a more privileged execution mode		✓

41) We can display the list of the active processes with **ls** command	✓	
42) A shell is an interface between the user and the kernel.	✓	
43) Kernel mode is a more privileged execution mode		✓
44) The angels file system is a virtual file system that is created by the OS at system boot time to provide an interface between the kernel space and user space		
45) Each process belongs to exactly one thread and no process can exist outside a thread		

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For CS532 Students Only

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CS332 students, please do not answer the questions below.

Multiple choice questions. Each question is worth 3 points.

46) While using the kill system call, If no signal is specified, the _____ signal is sent.

    a) SUSPEND
    b) DESTROY
    c) TERM
    d) STOP

47) The _____ file system is a virtual file system that is created by the OS at system boot time to provide an interface between the kernel space and user space.

    a) Daemons
    b) Angels
    c) Proc
    d) Init

48) fork() system call is executed and it returns zero to _____.

    a) Parent Process
    b) Child Process
    c) Process Table
    d) Process Cache

49) What will be the output of the following program?

```
#include <stdio.h>

int main(){

int a = 10, b = 20;

a = b++ + a++;

b = ++b + ++a;

printf("%d %d \n", a, b);

}
```

a) 32 52
b) 31 52
c) 32 53
d) 31 53

50) Which of the following operator is a logical operator in C?

a) &
b) ~
c) $
d) ||

51) How many times the following code prints "**hello**" ?

```
int main(){

        fork();

        printf("hello");

        fork();

        printf("hello");

}
```

a) 2
b) 4
c) 6
d) 8

52) _____ is NOT a linux built-in command
a. top
b. jobs
c. bg
d. up