

100+2 points. 50 minutes. Closed book/notes.

Name: \_\_\_\_\_

**Multiple choice questions. Each question is worth 3 points.**

- 1) Which one is not the part of compilation system?  
a) Header  
b) Compiler  
c) Assembler  
d) Linker
  
- 2) Which of the following statement is not True about the pointers?  
a) To reach the memory location variables, arrays...etc use ampersand (&) operator  
b) **\*a** will give the address of the int a  
c) It is possible to create a pointer of pointer  
d) The \* and & cancel each other when used together
  
- 3) Which of the following statement is True about the memory blocks?  
a) The stack segment is used to store the program code  
b) The code segment is used to store global variables  
c) **The heap segment is used for dynamic memory allocation**  
d) The data segment is used to store the function's data such as local variables
  
- 4) The role of the operating system is to  
a) Exploits the hardware resources of one or more processors  
b) Manages secondary memory and I/O devices  
c) Provides a set of services to system users  
d) **All of the above**

- 5) The \_\_\_\_\_ is the heart of the operating system. It interacts with the hardware and most of the tasks like memory management, task scheduling, and file management
- a) Bash
  - b) Shell
  - c) Kernel
  - d) Compiler

- 6) Which of the following describes the code below:

```
#include <stdio.h>
```

- a) Pointer
  - b) Function Declaration
  - c) Optimization Parameter
  - d) Preprocessor Command
- 7) Which of the following commands can be used to change default permissions for files and directories at the time of the creation?
- a) lseek
  - b) change
  - c) chperm
  - d) chmod
- 8) Which of the following statements is not True?
- a) The ~ character alone denotes the root of the filesystem tree
  - b) All data organized into files
  - c) All files organized into directories
  - d) Each file is uniquely identified by the inode

- 9) \_\_\_\_\_ is a non-negative integer number that uniquely identifies an open file in Unix
- a) Permission Mode
  - b) File Descriptor
  - c) struct stat

10) Which of the following describes the **directory permission** below

Owner: read write execute permission

Group: read permission

World: execute permission

- a) drwxr----x
- b) -rwxr-x--x
- c) drwxr-x--x
- d) rwxr--wx

11) Which command can be used to create an empty text file if it does not exist?

- a) touch
- b) makedir
- c) head
- d) cat

12)

```
int i;  
double d;
```

Which of the following is True about  $d=d+i$ ?

- a) d will be converted to int
- b) The result will be truncated
- c) d will be converted to double
- d) This operation can't be performed

13) Which of the following is an invalid constant used in fseek() function as 'whence' reference

- a) SEEK\_CUR

13) Which of the following is an invalid constant used in fseek() function as 'whence' reference

- a) SEEK\_CUR
- b) SEEK\_SET
- c) SEEK\_BEG
- d) SEEK\_END

14) Which of the following operator can be used to access the value at address stored in a pointer variable?

- a) ||
- b) >>
- c) &&
- d) \*

---

15) What is the type of the read function's return value?

- a) String
- b) Pointer
- c) Boolean
- d) int

16) Which of the following is True about the loops in C Language?

- a) for loop is faster than do-while loop
- b) do-while loop is always executed at least once
- c) the continue statement can't be used in do-while loop
- d) while loop is always executed at least once

17) In \_\_\_\_\_ Memory Allocation, the memory is allocated from the stack.

- a) Dynamic
- b) Bash
- c) Static
- d) Symbolic

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

```
int main()
{
    int x, y = 5, z = 5;
    x = y == z;
    printf("%d", x);
    return 0;
}
```

$x$ ;  
 $y = 5$   
 $z = 5$

$x = 5$

- a) Runtime Error
- b) 5
- c) 10
- d) 1

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

```
int main()
{
    int i = 5, j = 10, k = 15;
    printf("%d ", sizeof(k /= i + j));
    return 0;
}
```

$i = 5$   
 $j = 10$   
 $K = 15$

Size of int is 4.

- a) 1
- b) 15
- c) 13
- d) 4

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

```
int main()
{
    const int i = 0;
    printf("%d\n", i++);
    return 0;
}
```

- a) 0
- b) 1
- c) -1
- d) Return Error

---

21) True/False Questions. Each question is worth 2 points.

Statement	True	False
The size of a char pointer is equal to the size of an integer pointer.	✓	
A <del>Makefile</del> is created by typing the <i>make</i> command.		●
A shell is an interface between the user and the kernel.	●	
Unix peripherals like hard drives, CD-ROMs, printers are considered drives	●	
int <u>a[6][5]</u> ; statement will create an array with 6 columns and 5 rows		●
C programming language is an Object-Oriented Language	✓	
<del>gcc</del> is an interpretation system		●
<del>lstat</del> is a system call that is used to change the location of the read/write pointer of a file descriptor.		
Make recompiles all source files all the time to make sure the latest changes implemented correctly.	●	
Members of a structure are stored at different addresses, while the members of a union are stored at the same address.	●	
Assembly is the only language that we can create a system call.		●

22) In C Programming Language, what is the difference between `number++` and `++number` operations? Explain it. [5 points]

just fill multiple choice only very.  
exam 2 - complete. / need exam 1 only!

23) Explain the differences Dynamic Memory Allocation and Static Memory Allocations in terms of allocated memory location **[2 points]** and advantages/disadvantages **[3 points]**

24) Explain the Unix File System (Windows vs Unix) **[5 points]**

25) Explain the advantages of make utility **[5 points]**

26) Explain the Standard I/O Library. Discuss the Advantages of using it. **[5 points]**

27) What is the difference between `gets` and `fgets` commands? **[5 points]**

|100+5 points. 50 minutes. Closed book/notes.

Name: \_\_\_\_\_

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 ampersand (&) operator
  - b) \*a will give the address of the int a
  - c) It is not possible to create a pointer of pointer
  - d) The size of a character pointer and integer pointers are different

Primer

Please check your course section below.

CS532

CS332

You must use a **#2 pencil**.

Before you start, fill in your last name, your first initial, and your B00 number at the top of the Scantron, and your name on the paper exam

That is all that I need you to fill in. But please note that the B00 number is mandatory for this exam.

You have more than a minute per question. Each True/False questions worth 1 point and multiple-choice questions worth 3 points.

**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 ampersand (&) operator
- b) \*a will give the address of the int a
- c) It is not possible to create a pointer of pointer
- d) The size of a character pointer and integer pointers are different

100+6 points. 20 minutes. Closed book/notes.

(CS332 students: 120+6 points)

- 2) Which of the following statement is **True** about the memory blocks?

- a) The stack segment is used to store the program code
- b) The code segment is used to store global variables
- c) The heap segment is used for dynamic memory allocation
- d) The data segment is used to store the function's data such as local variables

- 3) \_\_\_\_\_ keeps on reading until it sees a newline character. Thus, it is **vulnerable** to Buffer Overflow attacks.

- a) fscanf
- b) fgets
- c) fopen
- d) gets

Please check your course section below.  
 CS332

CS333

- 4) Which of the following describes the code below;

```
#include <stdio.h>
```

- a) Pointer
- b) Function Declaration
- c) Optimization Parameter
- d) Preprocessor Command

- 5) \_\_\_\_\_ is a non-negative integer number that uniquely identifies an open file in Unix

- a) Permission Mode
- b) File Descriptor ✓
- c) struct stat
- d) Buffer

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Exam-2

6)

```
int i;  
double d;
```

Which of the following is **True** about  $d=d+i$  ?

- a) d will be converted to int
- b) The result will be truncated
- c) i will be converted to double
- d) This operation can't be performed

7) Which of the following is **True** about the loops in C Language?

- a) for loop is faster than do-while loop
- b) do-while loop is always executed at least once
- c) the continue statement can't be used in do-while loop
- d) while loop is always executed at least once

8) Which of the following statement is **not True** about I/O Redirection?

- a) Regular UNIX system commands take input from terminal
- b) > filename notation will be used to append the file
- c) < filename notation will be used for Input Redirection
- d) > filename notation will be used for Output Redirection

9) You can display various processes that are currently running in the background using the \_\_\_\_\_ command

- a) bg
- b) jobs
- c) ls
- d) ps

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

- a) Deadlock Detection
- b) Deadlock Prevention
- c) Deadlock Avoidance
- d) Deadlock Ignorance

11) \_\_\_\_\_ converts a **string to an integer**.

- a) atof
- b) atoi
- c) itoa
- d) str2int

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

- a) Identifier
- b) State
- c) Program Counter
- d) git status

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

- a) execvp
- b) mv
- c) wait
- d) change\_pimage()

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

```
int main()
{
    int i = 1;
    while( i++ <= 5 )
        printf("%d ", i++);
}
```

1 → 2 ++  
2 → 3 ++  
3 → 4 ++  
4 → 5 ++  
5 → 6 ++  
6 →

- a) 1 3 5
- b) 2 4 ✓
- c) 2 4 6
- d) 2

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

```
int main()
{
    int a = 4, b, c;
    b = --a;
    c = a--;
    printf("%d %d %d", a, b, c);
    return 0;
}
```

a = 4  
b = 3  
c = 3--;

- a) 3 3 2
- b) 2 3 2
- c) 3 2 2
- d) 2 3 3

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

```
int main()
{
    int maxV=100;
    int minV=10;
    int avgV;
    avgV = maxV + minV / 2; => 100 +  $\frac{10}{2}$  = 105
    printf("%d",avgV);
}
```

- a) 55
- b) 60
- c) 105
- d) Return Error

17) You can execute a program in the background by typing the program name followed by the symbol & at the end

- a) >>
- b) |
- c) ~
- d) &

18) Which of the following state does not exist for the Linux environment processes?

- a) Suspended
- b) Background
- c) Underground
- d) Foreground

19) The permanent blocking of a set of processes that either compete for system resources or communicate with each other is called \_\_\_\_\_?

- (a) Deadlock
- (b) Concurrency
- (c) Zombie Processes
- (d) Race Condition

20) There are three different options possible when a signal is delivered to a process. Which of the following is **not** one of these options?

- (a) Reboot the system to load the original register core
- (b) Ignore the signal
- (c) Perform the default option
- (d) Catch and handle the signal

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

21) Which of the following function takes the arguments as a vector?

- (a) execve
- (b) execle
- (c) execvp
- (d) execl

22) Which of the following system calls returns the process id of the parent process?

- (a) getid()
- (b) getpid()
- (c) getppid()
- (d) pid()

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23) 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

24) Global variables are stored in the \_\_\_\_\_ section of the memory

- a) Heap
- b) Data
- c) Stack
- d) Text

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

- a) Identifier
- b) State
- c) Program Counter
- d) Mutex

26) 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.

27) Which of the following operator can be used to access the value at address stored in a pointer variable?

- a) `||`
- b) `&&`
- c) `&`
- d) `*`

28) 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

29) 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

30) Which of the following sends a signal to suspend the execution of the current process?

- a) `Ctrl + Z`
- b) `Ctrl + S`
- c) `Ctrl + C`
- d) `Ctrl + I`

**True/False Questions. Each question is worth 1 point**

Statement	True	False
31) If the parent process exits before the child process completes its execution and terminates, the child process will become a zombie	✓	
32) A shell is an interface between the user and the kernel.	✓	
33) To change access modes on files you can use the chmod command.	✓	
34) Data part of the memory is dynamically allocated as needed	✓	✓
35) The parent id of a child is called pid <i>ppid</i>		✓
36) Signals are only created by the kernel		✓
37) Once the parent process creates the child process, the parent process will be terminated immediately. <i>it will wait</i>		✓
38) Processes may send each other signals	✓	
39) Unix is derived from Linux	✓	✓
40) User mode is a more privileged execution mode		✓
41) We can display the process tree with the <b>ps</b> command using the <b>--ptree</b> option		✓
42) A shell is an interface between the user and the kernel.	✓	

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43) System mode is a more privileged execution mode	<input checked="" type="checkbox"/>	(8)
44) The proc file system (procfs) 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	<input checked="" type="checkbox"/>	(8)
45) Each process belongs to exactly one thread and no process can exist outside a thread	<input checked="" type="checkbox"/>	(8)

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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) Assume input.txt is a regular file and text.in is a symbolic link to the file input.txt.

Which of the following system calls return the information about the text.in file?

- a) lstat("text.in", &buf);
- b) lstat("input.txt", &buf);
- c) stat("text.in", &buf);
- d) stat("input.txt", &buf);

47) Which command can be used to display the contents of a file on the screen?

- a) cat
- b) ls -

48) \_\_\_\_\_  
location.

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

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

```
int main()
{
    int a = 15, b = 25;
    a = b++ + a++;
    b = ++b + ++a;
    printf("%d %d \n", a, b);
    return 0;
}
```

$$a = 15$$

$$b = 25$$

$$a = 25++ + 15++ \\ = 40++ \rightarrow 41$$

$$b = 26 + 42 = 68$$

- e) 42 66
- f) 40 68
- g) 41 68**
- h) 43 69

50) Which of the following mechanism is **not** used to provide concurrency in UNIX?

- a) Pipes
- b) Signals
- c) Semaphores
- d) Symbolic Links**

51) How many times the given below program will print "CS332"?

```
#include <stdio.h>

int main()

{ printf("CS332");

    main();

    return 0;

}
```

- a) Unlimited times
- b) None
- c) 332 times
- d) Till stack run over

52) \_\_\_\_\_ are software interrupts that provide a mechanism to deal with asynchronous events

- a) Signals
- b) Kernels
- c) Zombie processes
- d) Pointers