Midterm Review

- MCQs
- Tracing questions (what would be the output)
- 1-2 problems (write the code, filling part of the code, not exceeding a page)

Midterm Review Questions

1. Which operator in C performs a bitwise AND operation?

a) &&

b) &

c) |

d) ^

2. What is the result of 1100 | 0101 in binary?

a) 0100

b) 1001

c) 1101

d) 1110

3. The expression ~A in C represents:

a) Logical NOT

b) Bitwise NOT

c) Logical OR

d) Bitwise AND

4. Which of the following correctly checks if the third bit (from right) is 1?

a) (n | 4) == 4

b) (n & 4) == 4

c) (n && 4)

d) (n ^ 4) == 0

5. What is the decimal value of the hexadecimal constant 0x30?

a) 30

b) 48

c) 60

d) 15

6. In the function:

int greaterValue(char c1, char c2)

{

return ((unsigned char)(c1 & VALUE_MASK) > (unsigned char)(c2 & VALUE_MASK));

}

Why is unsigned char used?

a) To allow negative comparisons

b) To ensure comparison as positive integers

c) To reduce memory size

d) To handle floating-point values

7. Which bitwise operation can be used to turn ON a specific bit?

a) & with mask

b) | with mask

c) ^ with mask //xor

d) && with mask

8. What does the mask 0x0F represent in binary?

a) 11110000

b) 00001111

c) 00110000

d) 00000011

9. If n = 8 (1000_2), what is the result of turnOnFirstAndThirdBits(n) when mask = 5?

a) 8

b) 9

c) 13

d) 5

10. What does the following Boolean algebra law express?

~(A | B) = ~A & ~B

a) Associative Law

b) Commutative Law

c) DeMorgan's Law

d) Distributive Law

11. Which header file is needed for printf() and scanf()?

a) <stdlib.h>

b) <math.h>

c) <stdio.h>

d) <string.h>

12. What does the & symbol represent in scanf("%d", &x);?

a) Bitwise AND

b) Address-of operator

c) Dereference operator

d) Logical AND

13. What is the purpose of stdin and stdout?

a) File handling

b) Input and output streams

c) Memory allocation

d) Pointer initialization

14. Which function reads a single character from input?

a) fgets()

b) scanf()

c) getchar()

d) fputs()

15. What happens when you enter a string using scanf("%s", s);?

a) It reads spaces as part of the string

b) It stops at the first whitespace

c) It reads an entire line

d) It skips the first character

16. What is the output of the following code?

char c = 'A';

printf("%d", c + 1);

a) A

b) 65

c) 66

d) 67

17. What does fgets(str, 100, stdin); do?

a) Reads one word

b) Reads one line including newline

c) Reads only numbers

d) Reads until null terminator

18. In C, strings are:

a) Arrays of integers

b) Arrays of characters ending with '\0'

c) Pointers to integers

d) Arrays of floats

19. Which library provides functions like strlen(), strcmp(), strcpy()?

a) <stdio.h>

b) <stdlib.h>

c) <string.h>

d) <math.h>

20. What is the output of this code?

char s[10] = "Hi";

fputs(s, stdout);

a) Error

b) Prints Hi

c) Prints ASCII codes

d) Prints nothing

21. Which operator performs a bitwise OR operation?

a) || b) | c) && d) &

22. What is the binary result of 1100 & 0101?

a) 1101 b) 0100 c) 1000 d) 1111

23. Which operator flips all bits of a number?

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

24. What does (n ^ 4) do?

a) Turns ON the third bit

b) Toggles the third bit

c) Clears the third bit

d) Leaves bits unchanged

25. What is the decimal equivalent of binary 00110000?

a) 30 b) 32 c) 48 d) 60

26. What is the output of printf("%d", 5 & 3);? (0101 & 0011)

a) 7 b) 1 c) 5 d) 3

27. In C, && and || are examples of:

a) Bitwise operators b) Logical operators c) Shift operators d) Arithmetic operators

28. Which operation would you use to check if a bit is ON?

a) AND with mask b) OR with mask c) XOR with mask d) NOT with mask

29. What does the expression x | 1 always result in?

a) Sets all bits to 1 b) Turns on the least significant bit c) Clears all bits d) Inverts bits

30. ~(A & B) is equivalent to:

a) ~A & ~B b) ~A | ~B c) A | B d) A ^ B

31. Which format specifier is used for floating-point numbers?

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

31. In scanf("%d", &x);, what happens if & is removed?

a) No error b) Program crash or wrong input c) Input works fine d) It becomes faster

32. Which of the following correctly defines a string?

a) char s = "Hello";

b) char s[] = "Hello";

c) string s = "Hello";

d) char *s = 'Hello';

33. Which header file provides string functions like strcmp()?

a) <stdio.h> b) <stdlib.h> c) <string.h> d) <ctype.h>

34. Which function compares two strings?

a) strcmp() b) strcat() c) strlen() d) strcpy()

35. What does strlen("Hello") return?

a) 4 b) 5 c) 6 d) 0

36. What will be printed?

int x = 10;

printf("%p", &x);   //p is pointer

a) Address of x b) Value of x c) 10 d) Compilation error

37. In char *p = "Hi";, what does p store?

a) The first character only

b) The address of the first character

c) The length of the string

d) The entire string directly

38. Which symbol is used for dereferencing a pointer?

a) @ b) * c) & d) %