

Name: _____ Roll No: _____

CS1109/CS1110 (Introduction to Computing)

Quiz 1

18th Aug 2025 8-9AM

TotalMarks:40

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1. [1 Mark] Write your Full Name, your Roll Number and Name of the Course Instructor (if possible).

Your Name, your Roll Number, A Sahu

2. [2 Marks] Convert $(11.45)_{10}$ to equivalent binary number.

1011.0111001110....

3. [3 Marks] Convert hexa decimal number $(175)_{16}$ to decimal number, binary number and octal number.

$$1 \times 16^2 + 7 \times 16^1 + 5 \times 16^0 = 373_{10}$$

$$(175)_{16} = (0001\ 0111\ 0101)_2 = (000\ 101\ 110\ 101)_2 = (565)_8$$

4. [4 Marks] Evaluate the following expressions using standard rule

a) $15 + 3 * 7 + (11/10)^2 + 2 = 39$

b) $15 + 3 * 7.2 + (11.0/10)^2 + 2 = 29.81$

c) $a=5; c=10; a += b = --c/2$; find value of a, b, c after the execution of three statements.
a=9, b=4, c=9

d) $2 + 5(4 + 2) + 32 - (1 + 6 \times 3) = 45$

5. [2 Marks] Write tight upper bound value for expression: $8*(1+2+4+8+...+2^k) < ?$

$$8*2^{k+1} - 1 + \text{eps} = 2^{k+4} - 1 + \text{eps}$$

6. [3 Marks] Identify all the in-valid identifier (or variable names) and report the why it is invalid for each one?

__fp32 V

#V2

X (start with #)

3V3 X (Start with3)

mass%es X(have %)

green_v2

V

while X (Keyword)

7. [2 Marks] Write difference between object code, executable code and assembly code.

Object code: Human Not Readable, Not Linked

Executable: Human Not Readable, Linked, Executes

ASM Code: Human Readable


```

return 0;
}

```

12. [2 Marks] Nth Fibonacci number is defined as $F_n = F_{n-1} + F_{n-2}$ with $F_0 = 1$ and $F_1 = 1$, Write efficient approach to calculate F_n using following hint. How many steps will required to calculate F_n .

$$\begin{pmatrix} 1 & 1 \\ 1 & 0 \end{pmatrix}^n = \begin{pmatrix} F_{n+1} & F_n \\ F_n & F_{n-1} \end{pmatrix}$$

Assume matrix as X
 if n is even $X^n = X^{n/2} \cdot X^{n/2}$
 Else $X^n = X^{n/2} \cdot X^{n/2} \cdot X$

Using this approach we can calculate X power N in $\log_2 N$ Step. Similarly for this also can be calculated in $\log_2 N$ Steps

13. [2 marks] What will be output of this code snippet.

```

int X; X=pow(2,25); //X=225
if (X==(float)X) { printf("XF");}
if (X==(double)X) { printf("XD");}

```

XF XD

14. [2 Marks] What will be output the following code snippet.

```

int X=10;
if(X>10) printf("G");
    if (X==10) printf("E");
else if (X<10) printf("L");
printf("W");

```

EW

15. [2 Marks] Can a “while loop” be always rewritten using a “for loop”? Argue your answer.

YES, both while and for loop are interchangeable, both are top tested loop

16. [4 Marks] Indentify range of values to be printed by the following for loops. You can use dot (...)

- a) for (i=0; i<100; i=i+2) printf(“%d ”, i); [0, 2, ..., 98]
- b) for (i=0; i<=10; i=i*2) printf(“%d ”, i); [0, 0, infinite time]
- c) for (i=1; i<=100; i=i*2) printf(“%d ”, i); [1,2,4,...64]
- d) for (i=1; i<=100; i++) printf(“%d ”, i); [1, 2, 3,..., 100]

Rough Work