Assignment 01 "EXPECTED" Solution

Group No.: [Your Group No.]

Group Members' Names & NSU IDs: [List Names & IDs]

Course Code: [Your Course Code]

Section: [Your Section]

Semester: Summer 2025

Submission Date: June 30, 2025

1. Number System and 2's Complement (Simple base division technique used)

Base 26 Conversion of 550 (Base 10):

550 / 26 = 21 remainder 4 => Symbol for 4 = E

21 / 26 = 0 remainder 21 => Symbol for 21 = V

Thus, 550 (Base 10) = VE (Base 26)

2's Complement Subtraction 51 - 89:

51 = 0110011 (7 bits)

89 = 1011001 (7 bits)

1's complement of 1011001 = 0100110

Add 1: 0100110 + 1 = 0100111

Addition:

0110011 (51)

+0100111 (-89)

1011010

Most Significant Bit (Leftest bit of answer) is 1, so it's negative. 2's complement for magnitude:

1's complement: 0100101

Add 1: 0100110 = 38

Result: -38 (Decimal)

2. Comparison (Easy AF)

RAM vs ROM:

- RAM: Temporary, Volatile, Read & Write, Active programs

- ROM: Permanent, Non-volatile, Mostly Read-Only, Boot instructions

Operating System vs Application Software:

- OS: Manages hardware & software, Platform for apps

- Application Software: Specific tasks, Runs on OS

3. Identifiers Classification

void: C reserved word

MAX_ENTRIES: Constant macro name

double: C reserved word

time: Standard identifier

G: Other valid identifier

Sue's: Invalid

return: C reserved word

printf: Standard identifier

xyz123: Other valid identifier

part#2: Invalid

"char": Invalid

#insert: Invalid

this_is_a_long_one: Other valid identifier

4. Best Variable Types (Not sure of the stars number tho)

- Area of circle: double

- Number of cars: int

- First letter of last name: char

- Tuition amount: double

- Number of stars: long long

5. Preprocessor and Declarations (Basic declaration)

#define SIZE 100

double radius, area, circumference;

int num_circ;

char circ_name;

6. Expression Evaluation

color = 2, crayon = -1.3, straw = 1, red = 3, purple = 3.0

white = 1.6667

orange = 0

blue = -3.0

lime = 2

purple = 0

white = 2 * 2.5 / 3.0 = 5.0 / 3.0 = 1.6667
orange = 2 / 3 = 0 (integer division)
blue = (2 + 1) / (-1.3 + 0.3) = 3 / (-1.0) = -3.0
lime = 3 / 2 + 3 % 2 = 1 + 1 = 2
purple = 1 / 3 * 2 = 0 * 2 = 0 (integer division)

7. Program to Execution Process (Keu slides dekhe janao hoise naki na)

Source Code -> (Compiler) -> Object Code -> (Linker) -> Executable File -> (Loader) -> Memory -> Execution

8. Information Flow During Execution (Keu slides dekhe janao hoise naki na(2))

Input -> CPU (Processing) -> Output

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Memory

9. Memory, Devices

1 Byte = 8 Bits

Memory Cell = Smallest addressable unit (typically 1 Byte)

Input: Keyboard, Mouse

Output: Monitor, Printer

Secondary Storage: Hard Drive, USB

10. Most Important Step

Problem Definition - Because it clarifies what to solve, prevents incorrect solutions.

11. Function Prototypes

void my_func_one();

char my_func_two();

int my_func_three(float);

double my_func_four(int, float);

12. gosper_factorial Function Variants (Assuming sir gave the standard value of R.W. Gosper formula)

With Parameters and Return Value:

double gosper_factorial(int n) { return sqrt(2 * pi * n) * pow(n / e, n) * pow(..., 1.0/6); }

With Parameters and No Return Value:

void gosper_factorial(int n) { double result = ...; printf("%lf", result); }

No Parameters and With Return Value:

```
double gosper_factorial() { int n = 5; return ...; }
```

No Parameters and No Return Value:

```
void gosper_factorial() { int n = 5; double result = ...; printf("%lf", result); }
```