University of Mila

Faculty of Science and Technology

Department of Process Engineering

Practical Work 05

Course Title: Structure of Computers and Applications

Level: 1st year ST - ENG & LMD

By:

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Exercise 01: Basic Print Statements

Question: Write a C program that prints: Your name, your age and your favorite programming language

Exercise 02: Printing Different Data Types

Question: Write a C program that declares and prints:

1. An integer variable
2. A float variable
3. A double variable
4. A character variable
5. A string

Exercise 03: Precision and Width Formatting

Question: Write a C program that prints floating-point numbers with: Different decimal precisions (%.1f, %.2f, %.3f)

Exercise 04: Escape Sequences

Question: Write a C program that demonstrates escape sequences:

1. Newline (\n)
2. Tab (\t)
3. Double quote (\")
4. Backslash (\\)

Exercise 05: Multiple Print Statements vs Single Print

Question: Write two C programs that produce the same output:

1. Using multiple printf statements
2. Using a single printf statement with \n

Exercise 06: Printing Patterns

Question: Write a C program that prints the following patterns using printf:
Pattern 1:

```
*
**
***
****
```

Pattern 2:

```
1
12
123
1234
```

Exercise 07: Mixed Data Type Printing

Question: Write a C program that prints a student report card:

1. Student name and roll number
2. Marks in 3 subjects (integers)
3. Percentage (float with 2 decimal places)
4. Grade (character)

Exercise 08: Basic Arithmetic Operations

Question 01: Write a C Program to add two integers and return their sum.

Question 02: Write a C program to accept two numbers from the user and calculate their sum, and then prints the result.

Exercise 09: Mixed Data Type Addition

Question 01: Write a C program that adds two float numbers and one integer, and then prints the result.

Question 02: Write a C program to accept two float numbers and one integer from the user, and calculate their sum, and then prints the result.

Exercise 10: Multiplication Operations

Question 01: Write a C Program to multiply two integer numbers and return the result.

Question 02: Write a C Program to multiply three floating-Point numbers and return the result.

Question 03: Write a C program to accept four (**integer**/**float**) numbers from the user and multiply them.

Exercise 11: Division Operations

Question 01: Write a C program that divides two numbers and displays the result.

Question 02: Write a program that **reads** two numbers and divides the first number by the second number and then displays the result.

Exercise 12 (Homework) : Complete Arithmetic Operations

Question: Write a C program to perform **basic arithmetic operations** of two numbers. Numbers are assumed to be integers and will be entered by the user.

Exercise 13: Temperature Conversion

Question: Write a C program to convert temperature from degree Fahrenheit to Celsius.
Note: The formula to convert a given temperature from Celsius scale to Fahrenheit scale is:

$$F = \frac{9}{5} \times C + 32$$

Math Functions in C Standard Library

Function Name	Math Name	Value	Example		
`abs(x)`	absolute value	$\|x\|$	`abs(-1)`	returns	1
`fabs(x)`	absolute value	$\|x\|$	`fabs(-3.2)`	returns	3.2
`pow(x,y)`	raise to the power	x^y	`pow(2.0, 3.0)`	returns	8.0
`sqrt(x)`	square root	$x^{0.5}$	`sqrt(2.0)`	returns	1.414...
`exp(x)`	exponential	e^x	`exp(1.0)`	returns	2.718...
`log(x)`	natural logarithm	$\ln x$	`log(2.718...)`	returns	1.0
`log10(x)`	common logarithm	$\log x$	`log10(100.0)`	returns	2.0
`sin(x)`	sine	$\sin x$	`sin(3.14...)`	returns	0.0
`cos(x)`	cosine	$\cos x$	`cos(3.14...)`	returns	-1.0
`tan(x)`	tangent	$\tan x$	`tan(3.14...)`	returns	0.0
`ceil(x)`	ceiling	$\lceil x \rceil$	`ceil(2.5)`	returns	3.0
`floor(x)`	floor	$\lfloor x \rfloor$	`floor(2.5)`	returns	2.0