BRAC University
Department of Electrical and Electronic Engineering

EEE/ECE-103IL: Computer Programming Laboratory
Fall 2025 (Section: 02)

Lab Final

1. Develop a **C program** that dynamically allocates memory to store the weights of **N packages** to be loaded onto a cargo truck. The value of **N** and the package weights will be entered by the user. [CO4] (10)

   The package weights are recorded in the order they are received.

   To maintain proper balance of the truck:

   - **Heavier packages must be loaded first**
   - **Lighter packages must be loaded later**

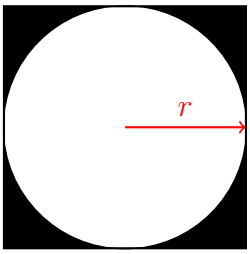
   Write a C program that performs the following tasks:

   - Dynamically allocate memory to store the package weights
   - Read all input values from the user
   - Process the data according to the loading rule
   - Display the final loading sequence

   Constraints:

   - Dynamic memory allocation mandatory
   - Do not use any built-in functions

2. The diagram below shows a circle inscribed in a square with both shapes sharing the same center. [CO4] (8)



a

   Assume a is the side length of the square, provided by the user. Write a C program using a function to:

   - Calculate the area of the square and circle
   - Calculate the percentage of the square's area covered by the inscribed circle
   - Print the result upto two decimal places

   Use the formula:

$$\text{Area of circle} = \pi r^2$$

3. The following program is supposed to print **all integers** that are not divisible by 3 and 5 and lie between 1 and a user-defined number (inclusive). The program also counts the total **number** of such integers and prints the result. [CO4] (7)

No.	Code	Explanation/Corrected
1		
2	`int main() {`	
3	`int end;`	
4	`printf("Enter the end number:  ");`	
5	`scanf("%f", &end);`	
6	`int i, Count;`	
7	`count = 0;`	
8	`for(i=1; i<end; i++) {`	
9	`    if ((i/3 != 0) & (i/5 != 0)) {`	
10	`        count = count + 1;`	
11	`        printf("%d\n", i)`	
12	`    }`	
13		
14	`printf("Total count is:  %c\n", Count);`	
15	`}`	