National University of Computer and Emerging Sciences



Lab Manual # 05

Programming Fundamental

(CS118)

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| Problem 1: Pattern printing |  |

Write a C++ program that used nested loops to print the following pattern. The height of the pattern is to be 5(which means the number of rows should be 5).

**For example:**

**1**

**1 2**

**1 2 3**

**1 2 3 4**

**1 2 3 4 5**

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| Problem 2: Pattern printing |  |

Write a C++ program that used nested loops to print the following pattern. The height of the pattern is to be 5(which means the number of rows should be 5).

**For example:**

**1 2 3 4 5**

**1 2 3 4 5**

**1 2 3 4 5**

**1 2 3 4 5**

**Note:**

You are required to take two variable a and b which are initialized to 1 at the time of initializing variable. The condition a <= 5 is the outer test condition and b <= 5 is the inner test condition which is tested for every iteration. Here, the inner while loop will be executed for 5 times for every time the test condition in the outer loop is true.

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| Problem 3: Print Pyramid |  |

Write a C++ program using nested loop to print the following pyramid using \*. The user should enter the number of rows and the maximum number of rows can be 10.

**For example:**

**Enter the number of rows = 5**

**The pattern**



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| Problem 4: Test-averaging program |  |

Write a C++ test-averaging program. It asks the user for the number of students and the number of test scores per student. You are required to use nested while loop. The inner which asks for all the test scores for one student, iterating once for each test score. The outer loop will iterate once for each student.

**Sample output:**

This program averages test scores.

For how many students do you have scores? 2 **[Enter]**

How many test scores does each student have? 3 **[Enter]**

Enter score 1 for student 1: 84 **[Enter]**

Enter score 2 for student 1: 79 **[Enter]**

Enter score 3 for student 1: 97 **[Enter]**

The average score for student 1 is 86.7.

Enter score 1 for student 2: 92 **[Enter]**

Enter score 2 for student 2: 88 **[Enter]**

Enter score 3 for student 2: 94 **[Enter]**

The average score for student 2 is 91.3.

Here enter means next line as well as enter input from user.

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| Problem 5: Pattern Printing |  |

Write a C++ program that uses nested loops to output the following pattern. The height of the pattern is to be input by the user and should not be greater than 9.

1 2 3 4 5 6 7 6 5 4 3 2 1

1 2 3 4 5 6 6 5 4 3 2 1

1 2 3 4 5 5 4 3 2 1

1 2 3 4 4 3 2 1

1 2 3 3 2 1

1 2 2 1

1 1

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| Problem 6: Palindrome |  |

Write a C++ program which checks a number is palindrome or not. You are required to take input from user. The output should be in following manner:

Enter the number: 121

Reversed number: 121

121 is a palindrome number.

Enter the number: 1231

Reversed number: 1321

1231 is not a palindrome number.