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| **National University of Computer and Emerging Sciences, Lahore Campus** | | | | |
| C:\Users\saif\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\final design.jpg | **Course Name:** | **Programming Fundamentals** | **Course Code:** | **CS** |
| **Program:** | **CS** | **Semester:** | **Fall 2018** |
| **Duration:** | **60 Minutes** | **Total Marks:** | **10+5+5+15** |
| **Paper Date:** |  | **Weight** |  |
| **Section:** | **ALL** | **Page(s):** | **2** |
| **Exam Type:** | **Sessional - I** |  |  |
| **Student : Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Roll No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section:\_\_\_\_\_\_\_** | | | | |
| **Instruction/Notes:** | Solve the exam on this question paper . You may use rough sheets, but they must not be attached. | | | |

Problem 1. The following program *should* print a fraction in its simplest form. The fraction is composed of two positive integers "num" and "denom". For example, if the fraction is 25/15, i.e. num is 25 and denom is 15, then its simplest form should be **5/3.** If num or denom is 0, then the program must print **Not** **possible**. Identify the logical errors in the code below **by circling them**, and provide corrections based on the above description.

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| #include<iostream> | Specify corrections for respective lines |
| using namespace std; | here! |
| int main() { |  |
| int num = 0, denom = 0, common=0,i=1; |  |
| cout<<"Enter numenator and denomenator"; |  |
| cin>> num >> denom; |  |
| if (num <= 0 && denom <= 0) | if (num <= 0 || denom <= 0) |
| cout << "Not possible "; |  |
| else |  |
| { |  |
| while (i>=num && i>=denom); | while (i <= num && i <= denom) |
| { |  |
| if (num % i==0 && denom % i==0) |  |
| common = i; |  |
| i = i+1; |  |
| } |  |
| num /= common; |  |
| denom /= common; |  |
| cout << num << "/" << denom; |  |
| } |  |
| return 0; } |  |

Problem 2: Give the output of the following code for different inputs in the box provided. (Ignore main etc.)

int temp = 0;

cin >> temp;

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| Temp | Output |
| 60 | **Normal** |
| 85 | **warmNormal** |
| 100 | **Warmand hot** |

if (temp > 80)

cout << "warm";

if (temp > 90)

cout << "and hot";

else

cout << "Normal";

Problem 3: Give the output of the following code for num1 = 6, and num1 = 9. (Ignore main etc.)

int num1, i=1;

cin >> num1;

while (i<=num1)

{

if (i % 2 == 0)

cout<< "-"<< num1 << "/" << ((i \* 2) - 1)<<" ";

else

cout << "+" << num1 << "/" << ((i \* 2) - 1)<<" ";

i = i + 1;

}

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| Num1 = 6 | **+6/1 -6/3 +6/5 -6/7 +6/9 -6/11** |
| Num1 = 9 | **+9/1 -9/3 +9/5 -9/7 +9/9 -9/11 +9/13 -9/15 +9/17** |

Problem 4: Write a program that takes three inputs from the user: a number x, a number y, and a number k (assume that these numbers are never negative). The program then finds out whether the kth digits of both x and y are the same. We count the digits from right to left. The right most digit is at k=0; the second digit from the right is at k=1; the next digit is at k=2, and so on. The program should print “kth digit is the same” if the kth digits of x and y are the same and “kth digit is not the same” otherwise. Some example inputs and outputs:

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| **Input** | **Output (on screen)** | **Note** |
| x = 578, y = 72, k=1 | “kth digit is the same” | both are 7 |
| x= 0, y = 1280, k=0 | “kth digit is the same” | both are 0 |
| x= 8, y = 1808, k=2 | “kth digit is not the same” | 2nd digit of y is 8, but x does not have a 2nd digit |
| X=1156, y =1808, k=3 | “kth digit is the same” | both are 1 |

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| --- |
| **int** **main**(){  **int x = 10810, y = 2800, k = 2;**  **int i = 0;**  **bool found = false;**  **if (k == 0){**  **found = (x % 10 == y % 10);**  **}**  **else{**  **while (x>0 && y>0 && !found)**  **{**  **if (i == k){**  **if (x % 10 == y % 10)**  **{**  **found = true;**  **}**  **}**  **x /= 10;**  **y /= 10;**  **i++;**  **}**  **}**  **if (found)**  **cout << "kth digit is the same";**  **else**  **cout << "kth digit is not the same";**  } |