Computer Programming I — Homework Assignment #3

**1.** Write a program that finds the two largest values among several positive integers of at most 8 digits. Assume that the first integer read specifies the number of values remaining to be entered. The screen dialog should appear as follows:

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| **Enter the number of integers to be processed followed by the integers:**  **6 10 3 15 21 26 14**  **Largest is 26**  **Second largest is 21**  **請按任意鍵繼續 . . .** |

**2.** (*Exercise 3.26*) Write a program that reads in a positive integer of at most 8 digits and determines whether it’s is a palindrome. The screen dialog should appear as follows:

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| **Enter a positive integer of at most 8 digits: 12321**  **12321 is a palindrome.**  **請按任意鍵繼續 . . .** |

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| **Enter a positive integer of at most 8 digits: 123456**  **123456 is not a palindrome.**  **請按任意鍵繼續 . . .** |

**3.** Write a program that inputs a positive integer of at most 8 digits and prints all its positive prime factors. The screen dialog should appear as follows:

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| **Enter a positive integer** **of at most 8 digits: 20281170**  **20281170 has the following prime factors: 2 3 5 7 13 17 19 23**  **請按任意鍵繼續 . . .** |

**4.** An integer is said to be a *perfect number* if the sum of its proper factors, including 1 (but not the number itself), is equal to the number. For example, 6 is a perfect number, because 6 . Write a program that reads in a positive integer *n* of at most 8 digits and prints all the perfect numbers between 1 and *n*. Print the factors of each perfect number to confirm that the number is indeed perfect. The screen dialog should appear as follows:

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| **Enter a positive integer** **of at most 8 digits: 1000**  **Perfect numbers between 1 and 1000:**  **6 = 1 + 2 + 3**  **28 = 1 + 2 + 4 + 7 + 14**  **496 = 1 + 2 + 4 + 8 + 16 + 31 + 62 + 124 + 248**  **請按任意鍵繼續 . . .** |

**5**. Write a program that prints the multiplication table as follows:

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| **2 \* 1 = 2 3 \* 1 = 3 4 \* 1 = 4 5 \* 1 = 5**  **2 \* 2 = 4 3 \* 2 = 6 4 \* 2 = 8 5 \* 2 = 10**  **2 \* 3 = 6 3 \* 3 = 9 4 \* 3 = 12 5 \* 3 = 15**  **2 \* 4 = 8 3 \* 4 = 12 4 \* 4 = 16 5 \* 4 = 20**  **2 \* 5 = 10 3 \* 5 = 15 4 \* 5 = 20 5 \* 5 = 25**  **2 \* 6 = 12 3 \* 6 = 18 4 \* 6 = 24 5 \* 6 = 30**  **2 \* 7 = 14 3 \* 7 = 21 4 \* 7 = 28 5 \* 7 = 35**  **2 \* 8 = 16 3 \* 8 = 24 4 \* 8 = 32 5 \* 8 = 40**  **2 \* 9 = 18 3 \* 9 = 27 4 \* 9 = 36 5 \* 9 = 45**  **6 \* 1 = 6 7 \* 1 = 7 8 \* 1 = 8 9 \* 1 = 9**  **6 \* 2 = 12 7 \* 2 = 14 8 \* 2 = 16 9 \* 2 = 18**  **6 \* 3 = 18 7 \* 3 = 21 8 \* 3 = 24 9 \* 3 = 27**  **6 \* 4 = 24 7 \* 4 = 28 8 \* 4 = 32 9 \* 4 = 36**  **6 \* 5 = 30 7 \* 5 = 35 8 \* 5 = 40 9 \* 5 = 45**  **6 \* 6 = 36 7 \* 6 = 42 8 \* 6 = 48 9 \* 6 = 54**  **6 \* 7 = 42 7 \* 7 = 49 8 \* 7 = 56 9 \* 7 = 63**  **6 \* 8 = 48 7 \* 8 = 56 8 \* 8 = 64 9 \* 8 = 72**  **6 \* 9 = 54 7 \* 9 = 63 8 \* 9 = 72 9 \* 9 = 81** |