C-Programming Mid-Term 1

Department of Computer Science and Engineering, National Sun Yat-sen University.

2018/10/25

Note:

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| **(1) 程式碼全部撰寫在同一個** .cpp /.c**檔中。**  **(2) 每一題輸出的結果皆須標明題號並且在每題間空三行來區隔。程式輸出請 參照附件(一)**  **(3)** .cpp **檔請用自己的學號命名。**  **(4) 輸出格式須與範例〝一模一樣〞，勿多寫跟少寫，否則會斟酌扣分。**  **(5) 對1題15分，對2題30分，對3題45分，對4題60分，對5題73分，對6題86分，全對100分** |

1. 請設計一程式印出你的學號及姓名

Please design a program to print your student ID and your name.

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| Name: 王小明  Student ID: M073040000  請按任意鍵繼續 . . . |

1. 請設計一程式，該程式需具有加、減、乘、除、取餘數、指數運算等這幾種計算機功能，若輸入運算子非上述幾種，則印出提示字樣。

Please design a program which can do addition, subtraction, multiplication, division, mod, exponential operation these function, if the input operator isn’t included in the 6 types, then print the warning message.

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| Please enter: 1 + 2  Result is 3  請按任意鍵繼續 . . . |

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| Please enter: 1 - 2  Result is -1  請按任意鍵繼續 . . . |

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| Please enter: 3 % 2  Result is 1  請按任意鍵繼續 . . . |

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| Please enter: 3 ^ 2  Result is 9  請按任意鍵繼續 . . . |

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| Please enter: 2 5 6  Please give an accurate operator  請按任意鍵繼續 . . . |

1. 請設計一程式，讓使用者輸入整數n，並確保n不小於2(若輸入之n小於2，則提示使用者再次輸入，直到n不小於2為止)，計算後輸出結果。

Please design a program, let user input an integer n, and make sure n is not less than 2(if input n less than 2, prompt the user input again, until n is not less than 2), calculate and print the result.

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| Please input a number: 0  Your input number must be larger than 2!  Please input a number: 1  Your input number must be larger than 2!  Please input a number: 2  3x1=3=3  請按任意鍵繼續 . . . |

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| Please input a number: 3  3x1+4x2=3+8=11  請按任意鍵繼續 . . . |

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| Please input a number: 9  3x1+4x2+5x3+6x4+7x5+8x6+9x7+10x8=3+8+15+24+35+48+63+80=276  請按任意鍵繼續 . . . |

1. 請設計一程式，印出聖誕樹圖案，輸入1時會印出一個三角形和樹幹，輸入2時印出兩個三角形和樹幹，輸入n時印出n個三角形和樹幹。

Please design a program to print the Christmas tree pattern. When you enter 1, you will print a triangle and a trunk. When you enter 2, you will print two triangles and a trunk. When you enter n, you will print n triangles and trunks.

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| 1  \*  \*\*\*  \*\*\*\*\*  \*  \*  請按任意鍵繼續 . . . |

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| 2  \*  \*\*\*  \*\*\*\*\*  \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*  \*  請按任意鍵繼續 . . . |

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| 5  \*  \*\*\*  \*\*\*\*\*  \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*  \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*  \*  \*\*\*  \*\*\*\*\*  \*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*  \*\*\*\*\*\*\*\*\*\*\*\*\*  \*  \*  請按任意鍵繼續 . . . |

1. 請設計一程式，讓使用者輸入一整數n，計算出大於1且小於n的所有質數。

Hint:如果小於根號n的所有正整數沒有n的因數，則n為質數。

Please design a program that allows the user to enter an integer n to calculate all prime numbers greater than 1 and less than n.

Hint: If all positive integers smaller than the root of number n have no factor of n, then n is a prime number.

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| Please input a number: 1000  2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199 211 223 227 229 233 239 241 251 257 263 269 271 277 281 283 293 307 311 313 317 331 337 347 349 353 359 367 373 379 383 389 397 401 409 419 421 431 433 439 443 449 457 461 463 467 479 487 491 499 503 509 521 523 541 547 557 563 569 571 577 587 593 599 601 607 613 617 619 631 641 643 647 653 659 661 673 677 683 691 701 709 719 727 733 739 743 751 757 761 769 773 787 797 809 811 821 823 827 829 839 853 857 859 863 877 881 883 887 907 911 919 929 937 941 947 953 967 971 977 983 991 997  請按任意鍵繼續 . . . |

1. 請設計一程式，輸入西元年月日，計算出當天是星期幾，程式需要可以連續輸入，直到輸入年份為0時離開。

Hit:西元年數為4的倍數時該年為閏年，1912年1月1日是星期一。

Please design a program, input is year and month and date, calculate the day of the week, the program needs to be able to input continuously until input year is 0.

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| Please input year (0 to Exit): 2018  Please input month : 10  Please input day : 25  2018/10/25 is Thursday.  Please input year (0 to Exit): 1995  Please input month : 9  Please input day : 16  1995/09/16 is Saturday.  Please input year (0 to Exit): 0  請按任意鍵繼續 . . . |

1. 請設計一程式，輸入4個數字(Ex:1、2、3、4)，能組成多少個互不相同且無重複數字的三位元數?請輸出個數並列出所有排列組合。

Please design a program, input 4 number(ex: 1, 2, 3, 4), how many three-digit numbers are formed that are different from each other and have no duplicate numbers? Please output the number of permutation and lists all permutation.

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| Please input four numbers:  1  2  3  4  The total number of permutations is \_\_\_\_\_.  123  124  .  .  .  .  .  .  .  .  .  請按任意鍵繼續 . . . |

附件一、

