Problem Set – More on Pass By Value Functions. Create an IPO for each of the problems below. Save the document with the IPO’s and then upload to Blackboard. Next write code for the problems. Then upload the .cpp files to Blackboard.

1. Allow the user to enter a quantity and price, use ctl+z to stop. Use a function to compute the total (quantity times price). The function should be passed the quantity and price and then return the total. Use another function to compute 10% discount if the total is over $10,000.00 and 5% for any amount equal to or lower than $10,000.00. The second function should receive the total, check which discount rate to charge, compute discount amount and then compute the discount total (total – discount amount). It should return the discount total. Display total and discount total. Sum total and discount total and display at the end.

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| Input | Process | Output |
| Function 1: Total/Quantity/price | Function for TOTAL TOTAL = QUANTITY \* PRICE |  |
| Function 2: Total (value from function 1)/discount amount/ discount price | Function for discount price: Create if statement within function: IF total > 10000  discount is .10 IF total is <= 10000 discount is .05 DISCOUNT AMOUNT = TOTAL \* DISCOUNT  DISCOUNT PRICE = TOTAL - DISCOUNT AMOUNT |  |
| Main: quantity, price, total | Enter values for QUANTITY and PRICE |  |
| Discount price, sum total, discounted sum | Create loop: TOTAL = FUNCTION1  DISCOUNT PRICE = FUNCITON2   Add all totals together Add all discounted totals together  display Total and discounted price for this entry  End loop: | Total: TOTAL  Discounted total: DISCOUNTED TOTAL  "Enter quantity and price of item (CTRL + Z when done): " |
|  | Display Sum of totals and discounted totals | Sum total: SUM TOTAL Discounted sum: DISCOUNTED SUM |

1. Enter players last name, number of hits and at bats at the keyboard, use ctl+z to stop. Use a function to compute batting average. Pass the hits and at bats to the function. The function should return batting average (at bats / number of hits). Display last name and batting average. Give a count of the number of players entered and display the count after the loop.

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| Function 1: at bats, number of hits, average | Function or AVERAGE: average = at bats / num of hits |  |
| Main: name, at bats, number of hits | Enter values for NAME, AT BATS, NUMBER OF HITS |  |
| Average | Start loop: average = FUNCITON1  entries = entries + 1   Display name and batting average per player End loop: | Name: NAME average: AVERAGE  "Enter last name (CTRL + Z if done): " |
| entries | Display number of players entered | Number of players: ENTRIES |
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1. Enter the destination city, miles travelled and gallons used for a trip, use ctl+z to stop. Use a function to compute miles per gallon. Pass miles travelled and gallons used to the function. The function should return miles per gallon. Use another function to compute gas cost. Pass to this function gallons used. Each gallon costs $3.50. Compute and return the cost. Display destination city, miles per gallon and cost of gas. Sum and display the total cost of gas.

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| Input | Process | Output |
| Function 1: Miles, gallons, mpg | Function for mpg: MPG = MILES / GALLONS |  |
| Function 2:  gas cost, gallon | Function for gas expenses: gas cost = gallon \* 3.50 |  |
| Main: city, miles, gallons, mpg | Enter value for city, gas , and miles | City: CITY Mpg: MPG |
| Gas cost, sum gas cost | Start Loop: mpg = FUNCTION 1 gas cost = FUNCTION 2 sum gas cost = sum gas cost + gas cost  display city, mpg, gas cost End loop: | Gas cost: GAS COST “Enter city name (CTRL + Z if done): " |
|  | Display total gas expense | Total gas expense: TOTAL GAS EXPENSE; |

1. Allow the employee to enter last name, job code and hours worked, use ctl+z to stop. Use a function to determine the pay rate. Pass to this function the job code and it should return rate of pay. Use the following rates based on Job code: L is $25/hr, A is $30/hr and J is $50/hr for respective pay rates. Write another function to determine the gross pay. Pass to this function the hours worked and pay rate and return gross pay. Give time and a half for overtime. Display last name and gross pay. Sum and display total of all gross pay.

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| Function 1: code, rate | Function deciding pay rate based on job code: If code = L, Rate = 25 If code = A, Rate = 30 If code = J, Rate = 50 |  |
| Function 2:  hours, rate Gross, ot rate, ot hours, ot gross | Function deciding overtime pay and calculating gross pay: If statement: If over 40 hours: OT rate = rate \* 1.5 OT hours = hours – 40 OT gross = Ot hours \* OT rate gross = 40 (hours) \* rate (regular) gross = gross (regular) + OT gross  IF hours <= 40: gross = hours \* rate |  |
| Main:  code, name | Enter values for name, hours, code | Name: NAME gross: GROSS "Enter Last name (CTRL + Z if done): " |
| Hours, rate, gross | Start loop: rate = FUNCTION 1 Gross = FUNCITON 2 Total Gross = total gross + gross  Display name and gross per user/entry End loop: |  |
| Total gross | Display total gross | Total gross: TOTAL GROSS |
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1. Allow the user to enter student last name, credit hours and district code, use ctl+z to stop. Use a function to compute tuition owed. First, write a function to determine the cost per credit hour. Charge In district (code of I) $250 per credit hour. Out of district (code of O) is $550 per credit hour. Write another function to compute tuition cost. Display student name and tuition cost. Sum and display total of all tuition costs.

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| Input | Process | Output |
| Function 1: code, charge | Function to decide cost per credit:  if CODE = I, CHARGE = 250 if CODE = O, CHARGE = 550 |  |
| Function 2:  tuition, credit hours, charge | Function to calculate tuition: tuition = credit hours \* CHARGE (from function 1) |  |
| Main:  code, name | Enter values for name, hours and code |  |
| Hours, tuition, credit charge | Start loop: Credit Charge = FUNCTION 1 tuition = FUNCTION 2 tuition sum = tuition sum + tuition  Display name and tuition per student/entry End loop: | Name : NAME tuition : TUITION  "Enter Last name (CTRL + Z when done): " |
| Tuition sum | Display tuition sum | Tuition sum : TUITION SUM |