COP 2220 Week 3 Assignments

Due 11:59 PM Monday September 17

By: David McCain

**Review Questions**

1. D
2. A
3. D
4. D
5. B
6. B
7. A
8. C
9. C
10. B

**Exercises**

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|  | **IPO chart** | **Coding instructions** |
| **Input** | food  rent  utilities  car payment | double food = 0.0;  double rent = 0.0;  double utilities =0.0;  double car =0.0; |
| **Process** | none | none |
| **Output** | total expenses | double totalExpenses = 0.0; |

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|  | **IPO chart** | **Coding instructions** |
| **Input** | latex price  mylar price  latex purchased  mylar purchased  sales tax rate of 6% | double latexPrice = 0.0;  double mylarPrice = 0.0;  int latexPurchased = 0;  int mylarPurchased = 0;  const double TAX\_RATE = 0.06; |
| **Process** | total latex cost  total mylar cost  subtotal  sales tax | double totalLatexCost = 0.0;  double totalMylarCost = 0.0;  double subtotal = 0.0;  double salesTax = 0.0; |
| **Output** | total cost | double totalCost = 0.0; |

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|  | **IPO chart** | **Coding instructions** |
| **Input** | latex price ($2.25)  mylar price ($3.75)  latex purchased  mylar purchased  sales tax rate (6%) | double latexPrice = 2.25;  double mylarPrice = 3.75;  int latexPurchased = 0;  int mylarPurchased = 0;  const double TAX\_RATE = 0.06; |
| **Process** | total latex cost  total mylar cost  subtotal  sales tax | double totalLatexCost = 0.0;  double totalMylarCost = 0.0;  double subtotal = 0.0;  double salesTax = 0.0; |
| **Output** | total cost | double totalCost = 0.0; |

Desk check #1

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|  | **IPO chart** | **Coding instructions** |
| **Input** | bananas price ($0.99 per lb.)  apples price ($1.89 per lb.)  bananas purchased (2 lbs.)  apples purchased (3.5 lbs.)  sales tax rate of 3% | double latexPrice = 0.99;  double mylarPrice = 1.89;  double latexPurchased = 2.0;  double mylarPurchased = 3.5;  const double TAX\_RATE = 0.03; |
| **Process** | total bananas cost  total apples cost  subtotal  sales tax | double totalBananasCost = 1.98;  double totalApplesCost = 6.61;  double subtotal = 8.59;  double salesTax = 0.26; |
| **Output** | total cost | double totalCost = 8.85; |

Desk check #2

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|  | **IPO chart** | **Coding instructions** |
| **Input** | bananas price ($0.58 per lb.)  apples price ($1.31 per lb.)  bananas purchased (5.7 lbs.)  apples purchased (8.3 lbs.)  sales tax rate of 6% | double latexPrice = 0.58;  double mylarPrice = 1.31;  double latexPurchased = 5.7;  double mylarPurchased = 8.3;  const double TAX\_RATE = 0.06; |
| **Process** | total bananas cost  total apples cost  subtotal  sales tax | double totalBananasCost = 3.30;  double totalApplesCost = 10.87;  double subtotal = 14.17;  double salesTax = 0.85; |
| **Output** | total cost | double totalCost = 15.02; |

Desk check #1

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|  | **IPO chart** | **Coding instructions** |
| **Input** | number of field goals  number of touchdowns  number of one-point conversions  number of two-point conversions  number of safeties  field goal value  touchdown value  one-point conversion value  two-point conversion value  safety value | int fieldGoals = 3;  int touchdowns = 2;  int onePointConversions = 2;  int twoPointConversions = 0;  int safeties = 1;  int fieldGoalValue = 3;  int touchdownValue = 6;  int onePointValue = 1;  int twoPointValue = 2;  int safetyValue = 2; |
| **Process** | total field goal points  total touchdown points  total one-point conversion points  total two-point conversion points  total safety points | int totalFieldGoalPoints = 9;  int totalTouchdownPoints = 12;  int totalOnePointConversionPoints = 2;  int totalTwoPointConversionPoints = 0;  int totalSafetyPoints = 2; |
| **Output** | total points | int totalPoints = 25; |

Desk check #2

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|  | **IPO chart** | **Coding instructions** |
| **Input** | number of field goals  number of touchdowns  number of one-point conversions  number of two-point conversions  number of safeties  field goal value  touchdown value  one-point conversion value  two-point conversion value  safety value | int fieldGoals = 2;  int touchdowns = 4;  int onePointConversions = 2;  int twoPointConversions = 1;  int safeties = 0;  int fieldGoalValue = 3;  int touchdownValue = 6;  int onePointValue = 1;  int twoPointValue = 2;  int safetyValue = 2; |
| **Process** | total field goal points  total touchdown points  total one-point conversion points  total two-point conversion points  total safety points | int totalFieldGoalPoints = 6;  int totalTouchdownPoints = 24;  int totalOnePointConversionPoints = 2;  int totalTwoPointConversionPoints = 2;  int totalSafetyPoints = 0; |
| **Output** | total points | int totalPoints = 34; |

Desk check #1

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|  | **IPO chart** | **Coding instructions** |
| **Input** | diameter of circle (35 ft.)  price of railing material ($2 per ft.) | double diameterOfCircle = 35.0;  double materialPricePerFoot = 2.0; |
| **Process** | pi value | double piValue = 3.1416; |
| **Output** | total price | double totalPrice = 219.91; |

Desk check #2

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|  | **IPO chart** | **Coding instructions** |
| **Input** | diameter of circle (15.5 ft.)  price of railing material ($3.50 per ft.) | double diameterOfCircle = 15.5;  double materialPricePerFoot = 3.50; |
| **Process** | pi value | double piValue = 3.1416; |
| **Output** | total price | double totalPrice = 170.43; |

Desk check #1

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|  | **IPO chart** | **Coding instructions** |
| **Input** | value of two-pointers  value of three-pointers  value of free throws  number of two-pointers from team  number of three-pointers from team  number of free throws from team  number of two-pointers from Michael  number of three-pointers from Michael  number of free throws from Michael | const int TWO\_POINTERS = 2;  const int THREE\_POINTERS = 3;  const int FREE\_THROWS = 1;  int teamTwoPointers = 25;  int teamThreePointers = 14;  int teamFreeThrows = 10;  int michaelTwoPointers = 11;  int michaelThreePointers = 4;  int michaelFreeThrows = 3; |
| **Process** | total of team two-pointers  total of team three-pointers  total of team free throws  total of team points  total of Michael’s two-pointers  total of Michael’s three-pointers  total of Michael’s free throws  total of Michael’s points | int teamTwoPointersTotal = 50;  int teamThreePointersTotal = 42;  int teamFreeThrowsTotal = 10;  int teamPointsTotal = 102;  int michaelTwoPointersTotal = 33;  int michaelThreePointersTotal = 12;  int michaelFreeThrowsTotal = 3;  int michaelPointsTotal = 48; |
| **Output** | total points scored percentage | double totalPointsPercentage = 47.1; |

Desk check #2

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|  | **IPO chart** | **Coding instructions** |
| **Input** | value of two-pointers  value of three-pointers  value of free throws  number of two-pointers from team  number of three-pointers from team  number of free throws from team  number of two-pointers from Michael  number of three-pointers from Michael  number of free throws from Michael | const int TWO\_POINTERS = 2;  const int THREE\_POINTERS = 3;  const int FREE\_THROWS = 1;  int teamTwoPointers = 29;  int teamThreePointers = 17;  int teamFreeThrows = 8;  int michaelTwoPointers = 9;  int michaelThreePointers = 5;  int michaelFreeThrows = 3; |
| **Process** | total of team two-pointers  total of team three-pointers  total of team free throws  total of team points  total of Michael’s two-pointers  total of Michael’s three-pointers  total of Michael’s free throws  total of Michael’s points | int teamTwoPointersTotal = 58;  int teamThreePointersTotal = 51;  int teamFreeThrowsTotal = 8;  int teamPointsTotal = 117;  int michaelTwoPointersTotal = 18;  int michaelThreePointersTotal = 15;  int michaelFreeThrowsTotal = 3;  int michaelPointsTotal = 36; |
| **Output** | total points scored percentage | double totalPointsPercentage = 30.8; |

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Desk check #1

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|  | **IPO chart** | **Coding instructions** |
| **Input** | odometer reading before trip (5500)  first stop (15.5 gallons refueled)  first stop odometer reading (5860)  second stop (18.7 gallons refueled)  second stop odometer reading (6280) | int initialOdometerReading = 5500;  double firstStopGallons = 15.5;  int firstStopOdometerReading = 5860;  double secondStopGallons = 18.7;  int secondStopOdometerReading = 6280; |
| **Process** | first stop miles driven  first stop miles per gallon driven  second stop miles driven  second stop miles per gallon driven | int firstStopMiles = 360;  double firstStopMPG = 23.2;  int secondStopMiles = 420;  double secondStopMPG = 22.5; |
| **Output** | average miles per gallon driven | double averageMilesPerGallonDriven = 22.8; |

Desk check #2

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|  | **IPO chart** | **Coding instructions** |
| **Input** | odometer reading before trip (5500)  first stop (16.3 gallons refueled)  first stop odometer reading (5910)  second stop (19.7 gallons refueled)  second stop odometer reading (6370) | int initialOdometerReading = 5500;  double firstStopGallons = 16.3;  int firstStopOdometerReading = 5910;  double secondStopGallons = 19.7;  int secondStopOdometerReading = 6370; |
| **Process** | first stop miles driven  first stop miles per gallon driven  second stop miles driven  second stop miles per gallon driven | int firstStopMiles = 410;  double firstStopMPG = 25.2;  int secondStopMiles = 460;  double secondStopMPG = 23.4; |
| **Output** | average miles per gallon driven | double averageMilesPerGallonDriven = 24.3; |

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Corrected program

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|  | **IPO chart** | **Coding instructions** |
| **Input** | original price  discount rate (10%) | double original = 0.0;  const double DISC\_RATE = 0.1; |
| **Process** | discount | double discount = 0.0; |
| **Output** | new price | double newPrice = 0.0; |

Desk check of the newly corrected program

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|  | **IPO chart** | **Coding instructions** |
| **Input** | original price ($50.0)  discount rate (10%) | double original = 50.0;  const double DISC\_RATE = 0.1; |
| **Process** | discount  (original price – discount = new price) | double discount = 5.0; |
| **Output** | new price | double newPrice = 45.0; |