***COP2270***

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***Spring 2015-2016***

[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCLz4t43Xq8gCFUXSHgodHjkHtQ&url=https://www.facebook.com/Competitive-Exams-Questions-Of-Computer-373127006115385/timeline/&psig=AFQjCNGTDdSN_DiPKgDEkLvqVXcJ2qd7jQ&ust=1444146484377830)

***Problem 1(30 Points):***

***Write a program that convert integer Fahrenheit temperature to Celsius or Celsius to Fahrenheit. Use floating points with 3-digit precision. Your program should***

1. *Prompt to CF or FC. Where CF converting Celsius to Fahrenheit and FC to convert for converting from Fahrenheit to Celsius.*
2. *Once you are ready to enter CF or FC, then*
   1. *Enter FC and then enter 5 testing values all at once and hit enter to give the final answers in two colmuns – Column 1: Your entered values and Column 2: Your converted value.*
   2. *Repeat step a for CF*

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| ***Commands (paste text not picture)*** |
| ***#include <stdio.h>***  ***int main(void)***  ***{***  ***float fah1;***  ***float fah2;***  ***float fah3;***  ***float fah4;***  ***float fah5;***  ***float fah;***  ***float cel1;***  ***float cel2;***  ***float cel3;***  ***float cel4;***  ***float cel5;***  ***float cel;***  ***char choice[2];***  ***printf("\nFC: Convert temperature from Fahrenheit to Celsius.");***  ***printf("\nCF: Convert temperature from Celsius to Fahrenheit.");***  ***printf("\nEnter your choice (FC, CF): ");***  ***scanf("%s",choice);***  ***if(strcmp(choice, "FC") == 0)***  ***{***  ***printf("\nEnter five temperatures in Fahrenheit: ");***  ***scanf("%f %f %f %f %f",&fah1, &fah2, &fah3, &fah4, &fah5);***  ***cel1= (fah1 - 32) / 1.8;***  ***cel2= (fah2 - 32) / 1.8;***  ***cel3= (fah3 - 32) / 1.8;***  ***cel4= (fah4 - 32) / 1.8;***  ***cel5= (fah5 - 32) / 1.8;***  ***printf("Temperature in Celsius: %.3f %.3f %.3f %.3f %.3f", cel1, cel2, cel3, cel4, cel5);***  ***printf("\n\nFahrenheit\tCelsius\n");***  ***printf("%3f\t%3f\n", fah1, cel1);***  ***printf("%3f\t%3f\n", fah2, cel2);***  ***printf("%3f\t%3f\n", fah3, cel3);***  ***printf("%3f\t%3f\n", fah4, cel4);***  ***printf("%3f\t%3f\n", fah5, cel5);***  ***}***  ***else if(strcmp(choice, "CF") == 0)***  ***{***  ***printf("\nEnter five temperatures in Celsius: ");***  ***scanf("%f %f %f %f %f",&cel1, &cel2, &cel3, &cel4, &cel5);***  ***fah1= (cel1\*1.8)+32;***  ***fah2= (cel2\*1.8)+32;***  ***fah3= (cel3\*1.8)+32;***  ***fah4= (cel4\*1.8)+32;***  ***fah5= (cel5\*1.8)+32;***  ***printf("Temperature in Fahrenheit: %.2f %.2f %.2f %.2f %.2f", fah1, fah2, fah3, fah4, fah5);***  ***printf("\n\nCelsius\t\tFahrenheit\n");***  ***printf("%3f\t%3f\n", cel1, fah1);***  ***printf("%3f\t%3f\n", cel2, fah2);***  ***printf("%3f\t%3f\n", cel3, fah3);***  ***printf("%3f\t%3f\n", cel4, fah4);***  ***printf("%3f\t%3f\n", cel5, fah5);***  ***}***  ***return 0;***  ***}*** |

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| ***Output (paste picture)*** |
| ../Screen%20Shot%202018-04-01%20at%204.09.52%20PM.png  ../Screen%20Shot%202018-04-01%20at%204.10.12%20PM.png |

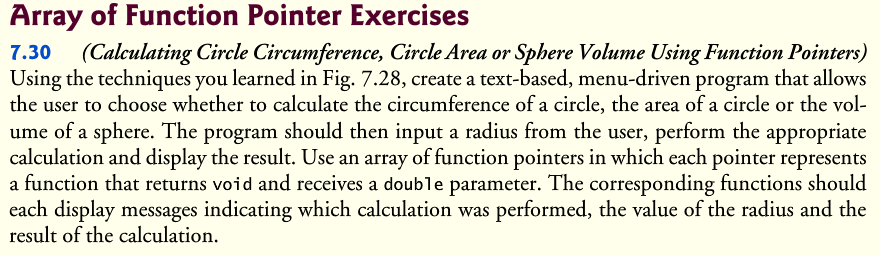
***Problem 2 (30 Points): Based on Figure 6.8 from the text. Write a program to graph an array element values with Histogram***

***Please use the following data set {10, 21, 3, 4, 12, 15}***

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| ***Commands*** |
| ***#include <stdio.h>***  ***#define SIZE 6***  ***int main(void)***  ***{***  ***int n[SIZE] = {10, 21, 3, 4, 12, 15};***  ***printf("%s%13s%17s\n", "Element", "Value", "Histogram");***  ***for (size\_t i = 0; i < SIZE; ++i) {***  ***printf("%7u%13d ", i, n[i]);***  ***for (int j = 1; j <= n[i]; ++j) {***  ***printf("%c", '\*');***  ***}***  ***puts("");***  ***}***  ***}*** |

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| ***Output*** |
| ../Screen%20Shot%202018-03-30%20at%2010.58.32%20PM.png |

***Problem 3A: (30 Points) Based on problem 7-30***



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| ***Commands*** |
| ***#include <stdio.h>***  ***int main(void)***  ***{***  ***void A(double number1, double pi);***  ***void B(double number1, double pi);***  ***void C(double number1, double pi);***  ***int choice=1;***  ***double radius=0;***  ***double pi=3.14;***  ***while (choice >= 1 && choice <= 3)***  ***{***  ***printf("Input 1 to calculate the circumference of a circle \n");***  ***printf("Input 2 to calculate the area of a circle \n");***  ***printf("Input 3 to calculate the volume of a sphere \n");***  ***printf("Press 4 to exit.\n");***  ***printf("Enter your choice\n");***  ***scanf("%d",&choice);***  ***if(choice == 4)***  ***return(0);***  ***printf("Enter the radius: ");***  ***scanf("%lf", &radius);***  ***void(\*func[3])(double, double)={&A, &B, &C};***  ***(\*func[choice-1])(radius, pi);***  ***return(0);***  ***}***  ***}***  ***void A(double number1, double pi)***  ***{***  ***double answer;***  ***answer=2\*number1\*pi;***  ***printf("Calculation for circumference of a circle was performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The circumference of the circle is: %lf\n", answer);***  ***return;***  ***}***  ***void B(double number1, double pi)***  ***{***  ***double answer;***  ***answer=pi\*pow(number1,2);***  ***printf("Calculation for area of a circle was performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The area of the circle is: %lf\n", answer);***  ***return;***  ***}***  ***void C(double number1, double pi)***  ***{***  ***double answer;***  ***answer=(4\*pi\*pow(number1,3)/3);***  ***printf("Calculation for volume of a sphere was performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The volume of the sphere is: %lf\n", answer);***  ***return;***  ***}*** |

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| ***Outputs*** |
| ../Screen%20Shot%202018-03-30%20at%209.57.13%20PM.png  ../Screen%20Shot%202018-03-30%20at%209.58.00%20PM.png  ../Screen%20Shot%202018-03-30%20at%209.59.24%20PM.png  ../Screen%20Shot%202018-03-30%20at%209.55.32%20PM.png |

***Problem 4: (40 Points) Repeat problem 3A and add another pointer/Command to give all parameters In addition to asking for diameter or radius, as discussed in class. That is Please enter “d 10” this means you have entered a diameter. Or “r 5” means you have entered a radius. Then proceed to to calculations as follows:***

***0 yield to circumference calculations***

***1 yield to Area calculations***

***2 yield to Volume calculations***

***3 yield to all calculations***

***And 4 exit the program***

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| ***Commands*** |
| ***#include <stdio.h>***  ***#include <math.h>***  ***int main(void)***  ***{***  ***void A(double number1, double pi);***  ***void B(double number1, double pi);***  ***void C(double number1, double pi);***  ***void D(double number1, double pi);***  ***int choice=0;***  ***double radius=0;***  ***double pi=3.14;***  ***while (choice >= 0 && choice <= 4)***  ***{***  ***printf("Input 0 to calculate the circumference of a circle \n");***  ***printf("Input 1 to calculate the area of a circle \n");***  ***printf("Input 2 to calculate the volume of a sphere \n");***  ***printf("Input 3 to show all calculations \n");***  ***printf("Press 4 to exit.\n");***  ***printf("Enter your choice\n");***  ***scanf("%d",&choice);***  ***if(choice == 4)***  ***return(0);***  ***printf("Enter the radius: ");***  ***scanf("%lf", &radius);***  ***void(\*func[4])(double, double)={&A, &B, &C, &D};***  ***(\*func[choice-0])(radius, pi);***  ***return(0);***  ***}***  ***}***  ***void A(double number1, double pi)***  ***{***  ***double answer;***  ***answer=2\*number1\*pi;***  ***printf("Calculation for circumference of a circle was performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The circumference of the circle is: %lf\n", answer);***  ***return;***  ***}***  ***void B(double number1, double pi)***  ***{***  ***double answer;***  ***answer=pi\*pow(number1,2);***  ***printf("Calculation for area of a circle was performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The area of the circle is: %lf\n", answer);***  ***return;***  ***}***  ***void C(double number1, double pi)***  ***{***  ***double answer;***  ***answer=(4\*pi\*pow(number1,3)/3);***  ***printf("Calculation for volume of a sphere was performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The volume of the sphere is: %lf\n", answer);***  ***return;***  ***}***  ***void D(double number1, double pi)***  ***{***  ***double answer1;***  ***double answer2;***  ***double answer3;***  ***answer1=2\*number1\*pi;***  ***answer2=pi\*pow(number1,2);***  ***answer3=(4\*pi\*pow(number1,3)/3);***  ***printf("All calculations were performed.\n");***  ***printf("The radius inputted was: %lf\n", number1);***  ***printf("The circumference of the circle is: %lf\n", answer1);***  ***printf("The area of the circle is: %lf\n", answer2);***  ***printf("The volume of the sphere is: %lf\n", answer3);***  ***return;***  ***}*** |

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| ***Outputs*** |
| ../Screen%20Shot%202018-04-02%20at%201.17.21%20PM.png |