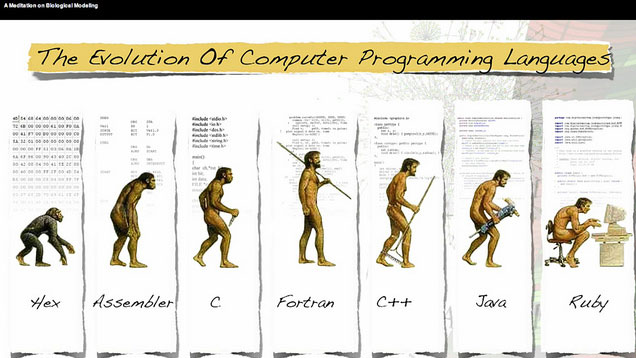
***COP2270***

***M/W***

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***Anaisy Garcia***

***Chapter 3 Homework/ Exercises***

***Duplicate Figures 3.6, 3.8, 3.10, 3.13***

***Problem 3.16, 3.20 3.24 and 3.41 from the end of chapter***

***One problem per page Please***

***Figure 3-6***

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| ***Commands*** |
| ***// Fig. 3.6: fig03\_06.c***  ***// Class averaage program with counter-controlled iteration.***  ***#include <stdio.h>***  ***// function main begins program execution***  ***int main(void)***  ***{***  ***unsigned int counter; // number of grade to be entered next***  ***int grade; // grade value***  ***int total; // sum of grades entered by user***  ***int average; // average of grades***  ***// initialization phase***  ***total = 0; //initialize total***  ***counter = 1; //initialize loop counter***  ***// processing phase***  ***while(counter <= 10) { //loop 10 times***  ***printf("%s", "Enter grade:"); // prompt for input***  ***scanf("%d", &grade); // read grade from user***  ***total = total + grade; // add grade to total***  ***counter = counter + 1; // increment counter***  ***} // end while***  ***// termination phase***  ***average = total / 10; // integer division***  ***printf("Class average is %d\n", average); // display result***  ***} // end function main*** |

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| ***Output*** |
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***Figure 3-8***

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| ***Commands*** |
| ***// Fig. 3.8: fid03\_0.c***  ***// Class-Average program with sentinel-controlled iteration.***  ***#include <stdio.h>***  ***// funtion main begins program execution***  ***int main(void)***  ***{***  ***unsigned int counter; // number of grades entered***  ***int grade; // grade value***  ***int total; // sum of grades***  ***float average; // number with decimal point for average***  ***// initialization phase***  ***total = 0; // initialize total***  ***counter = 0; // initialize loop counter***  ***// processing phase***  ***// get first grade from user***  ***printf("%s", "Enter grade, -1 to end: "); // prompt for input***  ***scanf("%d", &grade); // read grade from user***  ***// loop while sentinel value not yet read from user***  ***while (grade != -1) {***  ***total = total + grade; // add grade to total***  ***counter = counter + 1; // increment counter***  ***// get next grade from user***  ***printf("%s", "Enter grade, -1 to end: "); // prompt for input***  ***scanf("%d", &grade); // read next grade***  ***} // end while***  ***// termination phase***  ***// if user entered at least one grade***  ***if (counter != 0) {***  ***// calculate average of all grades entered***  ***average = (float) total / counter; //avoid truncation***  ***// display average with two digits of percision***  ***printf("Class average is %.2f\n", average);***  ***} // end if***  ***else { // if no grades were entered, output message***  ***puts("No grades were entered");***  ***} // end else***  ***} //end function*** |

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| ***Output*** |
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***Figure 3-10***

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| ***Commands*** |
| ***// Fig. 3.10: fig03\_10.c***  ***// Analysis of examination results.***  ***#include <stdio.h>***  ***// function main begins program execution***  ***int main(void)***  ***{***  ***// initialize variables in definitions***  ***unsigned int passes = 0; // number of passes***  ***unsigned int failures = 0; // number of failures***  ***unsigned int student = 1; // student counter***  ***int result; //one exam result***  ***// process 10 students using counter-controlled loop***  ***while ( student <= 10) {***  ***// prompt user for input and obtain value from user***  ***printf("%s", "Enter result (1=pass, 2=fail): ");***  ***scanf("%d", &result);***  ***// if result 1, increment passes***  ***if (result == 1) {***  ***passes = passes + 1;***  ***} // end if***  ***else { // otherwise, increment failures***  ***failures = failures + 1;***  ***} // end else***  ***student = student + 1; // increment student counter***  ***} // end while***  ***// termination phase; display number of passes and failures***  ***printf("Passed %u\n", passes);***  ***printf("Failed %u\n", failures);***  ***// if more than eight students passed, print "Bonus to instructor!"***  ***if (passes > 8) {***  ***puts("Bonus to instructor!");***  ***} // end if***  ***} // end function main*** |

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| ***Output*** |
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***Figure 3-13***

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| ***Commands*** |
| ***// Fig. 3.13: fig03\_13.c***  ***// Preincrementing and postincrementing.***  ***#include <stdio.h>***  ***// function main begins program execution***  ***int main(void)***  ***{***  ***int c; // define variable***  ***// demonstrate prostincrement***  ***c = 5; // assign 5 to c***  ***printf("%d\n", c); // print 5***  ***printf("%d\n", c++); // print 5 then postincrement***  ***printf("%d\n\n", c); // print 6***  ***// demonstrate preincrement***  ***c = 5; // assign to c***  ***printf("%d\n", c); // print 5***  ***printf("%d\n", ++c); // preincrement then print 6***  ***printf("%d\n", c); // print 6***  ***} // end function main*** |

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| ***Output*** |
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***Figure 3-16***

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| ***Commands*** |
| ***// Fig 3.16: fig03\_16.c***  ***// Gas Mileage***  ***#include <stdio.h>***  ***// function main begins program***  ***int main(void)***  ***{***  ***float mile = 0;***  ***float gallon = 0;***  ***float totalmile = 0; // sum of miles***  ***float totalgallon = 0; // sum of gallons***  ***float totalaverage = 0; // miles divided gallons***  ***printf("Enter the gallons used (-1 to end):"); // prompt for input***  ***scanf("%f", &gallon); //read gallons***  ***//loop***  ***while(gallon != -1){***  ***totalgallon = totalgallon + gallon; // add to total gallons***  ***printf("Enter the miles driven:"); // prompt for input***  ***scanf("%f", &mile); // read mile***  ***totalmile = totalmile + mile; // add to total miles***  ***printf("The miles per gallon for this tank was: %f", mile/gallon); // calculate miles per gallon***  ***// end loop***  ***printf("\nEnter the gallons used (-1 to end):"); // terminates infinate loop / prompts for input***  ***scanf("%f", &gallon); // reads gallons***  ***}***  ***// if total gallons is not zero***  ***if (totalgallon != 0){***  ***totalaverage = totalmile / totalgallon; // calculate total***  ***printf("The overall average miles per gallon was: %f \n", totalaverage); // propmt total average***  ***}***  ***else{***  ***printf("No gallons entered\n");***  ***}***  ***}*** |

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| ***Output*** |
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***Problem 3-20***

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| ***Commands*** |
| ***// Fig 3.20: fig03\_20.c***  ***// Salary Calculator***  ***#include <stdio.h>***  ***// function main begins proigram***  ***int main(void)***  ***{***  ***int hour;***  ***float rate;***  ***float salary;***  ***int normaltime;***  ***int overtime;***  ***printf("Enter number of hours worked (-1 to end):"); // prompt for input***  ***scanf("%d", &hour); //read hour***  ***//loop***  ***while(hour != -1){***  ***printf("Enter hourly rate of the worker ($00.00):"); // prompt for input***  ***scanf("%f", &rate); // read rate***  ***// if hours less than or equal to 40***  ***if (hour <= 40){***  ***normaltime = hour\*rate; // calculate salary***  ***overtime = 0;***  ***}***  ***else{***  ***normaltime = 40 \* rate; // calculate salary***  ***overtime = (hour-40)\*(rate\*3/2);***  ***}***  ***salary = normaltime + overtime;***  ***printf("Salary is %.2f\n\n", salary); // prompt salary***  ***//end loop***  ***printf("Enter number of hours worked (-1 to end):");***  ***scanf("%d", &hour);***  ***}***  ***}*** |

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| ***Output*** |
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***Problem 3-24***

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| ***Commands*** |
| ***// Fig 3.24: fig03\_24.c***  ***// Tabular Output***  ***#include <stdio.h>***  ***// function main begins proigram***  ***int main(void)***  ***{***  ***int n = 1;***  ***int ten = 10;***  ***int hundred = 100;***  ***int a;***  ***int b;***  ***int c;***  ***printf("N\t10\*N\t100\*N\t1000\*N\n"); // assign table headers***  ***// start loop to 10***  ***while (n<=10){***  ***printf("%d\t", n); // multiply necessary numbers and print to table***  ***a = n \* ten;***  ***printf("%d\t", a);***  ***b = n \* hundred;***  ***printf("%d\t", b);***  ***c = n \* 1000;***  ***printf("%d\n",c);***  ***n++;***  ***}***  ***}*** |

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| ***Output*** |
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***Problem 3-41***

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| ***Commands*** |
| ***// Fig 3.41: fig03\_41.c***  ***// diameter circumference and area of a circle***  ***#include <stdio.h>***  ***// function main begins program***  ***int main(void)***  ***{***  ***float pi = 3.14159;***  ***float radius;***  ***float diameter;***  ***float circumference;***  ***float area;***  ***printf("Enter radius of the circle:");***  ***scanf("%f", &radius);***  ***diameter = radius \* 2;***  ***printf("\nThe diameter is %f", diameter);***  ***circumference = 2 \* pi \* radius;***  ***printf("\nThe circumference is %f", circumference);***  ***area = pi \* (radius \* radius);***  ***printf("\nThe area is %f\n", area);***  ***}*** |

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| ***Output*** |
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| --- | --- |
| ***Command(s) learned*** | |
| ***command*** | ***comment*** |
| ***Unsigned int*** | ***Integers that can only be positive*** |
| ***total*** | ***Initializes total*** |
| ***counter*** | ***A stored value that can be increased initializes loop counter*** |
| ***while*** | ***Allows for program to be looped to a certain amount or infinitely*** |
| ***float*** | ***Allows decimal places*** |
| ***if*** | ***Poses a question of true or false*** |
| ***else*** | ***If the if is false this comes after as a follow much like in a flowchart*** |
| ***puts*** | ***Another output statement like printf*** |
| ***C++*** | ***postincrement*** |
| ***++C*** | ***pretincrement*** |
| ***\t*** | ***Horizontal tab*** |