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| 1. Write a program that finds the largest in a series of numbers entered by the user. The program must prompt the user to enter numbers one by one When the user enters 0 or a negative number, the program must display the largest nonnegative number entered:   1 #include <stdio.h>  2  3 int main(void)  4 {  5 float num, max;  6  7 for (max = 0.0f;;) {  8 printf("Enter a number: ");  9 scanf("%f", &num);  10  11 if (num > 0) max = (num < max) ? (max) : (num);  12 else break;  13 }  14  15 printf("The largest number entered was %.2f \n", max);  16  17 return 0;  18 } |
| 1. Write a program that asks the user to enter two integers, then calculates and displays their greatest common divisor (GCD):   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int n, m, temp;  6  7 printf("Enter two integers: ");  8 scanf("%d %d", &n, &m);  9  10 while (n != 0) {  11 temp = n;  12 n = m % n;  13 m = temp;  14 }  15  16 printf("Greatest common divisor: %d \n", m);  17  18 return 0;  19 } |
| 1. Write a program that asks the user to enter a fraction, then reduces the fraction to lowest terms:   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int n, m, temp, gcd;  6 int origin\_n, origin\_m;  7  8 printf("Enter a fraction: ");  9 scanf("%d/%d", &n, &m);  10  11 origin\_n = n, origin\_m = m;  12  13 while (n != 0) {  14 temp = n;  15 n = m % n;  16 m = temp;  17 } gcd = m;  18  19 printf("In lowest terms: %d/%d \n",  20 origin\_n / gcd, origin\_m / gcd);  21  22 return 0;  23 } |
| 1. Add a loop to the broker.c program of Section 5.2 so that the user can enter more than one trade and the program will calculate the commission on each. The program should terminate when the user enters 0 as the trade value:   1 #include <stdio.h>  2  3 int main(void)  4 {  5 float commission, value;  6  7 for (;;) {  8 printf("Enter value of trade: ");  9 scanf("%f", &value);  10  11 if (value <= 0.0f) break;  12  13 if (value < 2500.00f)  14 commission = 30.00f + 0.017f \* value;  15 else if (value < 6250.00f)  16 commission = 56.00f + 0.0066f \* value;  17 else if (value < 20000.00f)  18 commission = 76.00f + 0.0034f \* value;  19 else if (value < 50000.00f)  20 commission = 100.00f + 0.0022f \* value;  21 else if (value < 500000.00f)  22 commission = 166.00f + 0.0011f \* value;  23 else  24 commission = 255.00f + 0.0009f \* value;  25  26 if (commission < 39.00f)  27 commission = 39.00f;  28  29 printf("Commission: $%.2f \n", commission);  30 }  31  32 return 0;  33 } |
| 1. Programming Project 1 in Chapter 4 asked you to write a program that displays a two-digit number with its digits reversed. Generalize the program so that the number can have one, two, three, or more digits.   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int number;  6  7 printf("Enter the number: ");  8 scanf("%d", &number);  9  10 printf("Reversed number: ");  11 do  12 printf("%d", number % 10);  13 while (number /= 10, number > 0);  14 printf("\n");  15  16 return 0;  17 } |
| 1. Write a program that prompts the user to enter a number n, then prints all even squares between 1 and n.   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int n;  6  7 scanf("%d", &n);  8 for (int i = 1, j = -1; i < n; i++) {  9 if (i % 2) continue;  10  11 for (j = 2; (j \* j) <= i; j++)  12 if ( (j \* j) == i)  13 printf("%d \n", i);  14 }  15  16 return 0;  17 } |
| 1. Rearrange the square3.c program so that the for loop initializes i, tests i, and increment i. Don’t rewrite the program; in particular, don’t use any multiplications.   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int n;  6  7 printf("This program prints a table of squares. \n");  8 printf("Enter number of entries in table: ");  9  10 scanf("%d", &n);  11  12 for (int i = 1, add = 1, k = 1; i <= n; i += add += 2)  13 printf("%10d%10d\n", k++, i);  14  15 return 0;  16 } |
| 1. Write a program that prints a one-month calendar. The user specifies the number of days in the month and the day of the week on which the month begins:   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int num\_of\_days, start\_day\_of\_week;  6  7 printf("Enter number of days in month: ");  8 scanf("%d", &num\_of\_days);  9  10  11 printf("Enter Starting day of the week (1=Sun, 7=Sat): ");  12 scanf("%d", &start\_day\_of\_week);  13  14 for (int i = (-start\_day\_of\_week) + 1; i < num\_of\_days; i++)  15 {  16 if (i < 0) {  17 printf(" ");  18 } else {  19 printf("%3d", i + 1);  20  21 if ((i + start\_day\_of\_week) % 7 == 0)  22 printf("\n");  23 }  24 } printf("\n");  25  26 return 0;  27 } |
| 1. Modify the program so that it also asks the user to enter the number of payments and then displays the balance remaining after each of these payments.   1 #include <stdio.h>  2  3 int main(void)  4 {  5 float loan, interest, payment;  6 int count;  7  8 printf("Enter amount of loan: ");  9 scanf("%f", &loan);  10  11 printf("Enter interest rate: ");  12 scanf("%f", &interest);  13  14 printf("Enter monthly payment: ");  15 scanf("%f", &payment);  16  17 printf("Enter number of payment: ");  18 scanf("%d", &count);  19  20 interest = (interest / 100.0f) / 12.0f + 1.0f;  21  22 for (int i = 0; i < count; i++) {  23 loan = loan \* interest;  24 loan = loan - payment;  25 printf("Balance remaining after the payment: $%.2f \n", loan);  26 }  27  28 return 0;  29 } |
| 1. Programming Project 9 in Chapter 05 asks you to write a program that determines which of two dates comes earlier on the calendar. Generalize the program so that the user may enter any number of dates. The user will enter 0/0/0 to indicate that no more dates will be entered:   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int month, day, year;  6 int earlist\_month, earlist\_day, earlist\_year;  7 int comp1, comp2;  8  9 for (comp2 = -1;;) {  10 printf("Enter a date (mm/dd/yy): ");  11 scanf("%d/%d/%d", &month, &day, &year);  12  13 if (month == 0 && day == 0 && year == 0)  14 break;  15  16 comp1 = month \* 30 + day + year \* 360;  17 if (comp2 == -1)  18 comp2 = comp1 + 1;  19  20 if (comp1 < comp2) {  21 comp2 = comp1;  22  23 earlist\_month = month;  24 earlist\_day = day;  25 earlist\_year = year;  26 }  27 }  28  29 printf("%d/%d/%.2d is the earliest date \n",  30 earlist\_month, earlist\_day, earlist\_year);  31  32 return 0;  33 } |
| 1. Write a program that approximates e by computing the value of ... where n is an integer entered by the user   1 #include <stdio.h>  2  3 int main(void)  4 {  5 int n;  6 float e, temp;  7  8 e = 1.0f;  9  10 printf("Enter the precision of e: ");  11 scanf("%d", &n);  12  13 for (int i = 1; i <= n; i++) {  14 temp = 1.0f;  15 for (int j = 1; j <= i; j++)  16 temp \*= j;  17  18 e += 1.0f / temp;  19 }  20  21 printf("e = %f \n", e);  22  23 return 0;  24 } |
| 1. Modify Programming Project 11 so that the program continues adding terms until the current term becomes less than epsilon, where epsilon is a small (float-point) number entered by the user   1 #include <stdio.h>  2  3 int main(void)  4 {  5 float epsilon;  6 float e, temp;  7  8 printf("Enter the precision of e: ");  9 scanf("%f", &epsilon);  10  11 e = 1.0f;  12 for (int i = 1;; i++) {  13 temp = 1.0f;  14 for (int j = 1; j <= i; j++)  15 temp \*= j;  16  17 temp = 1.0f / temp;  18 if (temp < epsilon) break;  19  20 e += temp;  21 }  22  23 printf("e = %f \n", e);  24  25 return 0;  26 } |