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| 1. Write a program that uses printf to display the following picture on the screen:  1 #include <stdio.h>  2  3 int main(void)  4 {  5 printf(" \* \n");  6 printf(" \* \n");  7 printf(" \* \n");  8 printf("\* \* \n");  9 printf(" \* \* \n");  10 printf(" \* \n");  11  12 return 0;  13 } |
| 2. Write a program that computes the volume of a sphere with a 10-meter radius  1 #include <stdio.h>  2  3 #define PI (3.141592f)  4  5 int main(void)  6 {  7 float volume;  8 float radius;  9  10 printf("radius: 10 \n");  11 radius = 10;  12  13 volume = (4.0f / 3.0f) \* PI \*  14 radius \* radius \* radius;  15 /\*  16 volume = (4 / 3) \* PI \*  17 radius \* radius \* radius;  18 // (4 / 3) = 1 ---> PI \* radius \* radius \* radius  19 \*/  20  21 printf("volume: %.2f \n", volume);  22  23 return 0;  24 } |
| 3. Modify the program of Programming Project 2 so that it prompts the user to enter the radius of the sphere.  1 #include <stdio.h>  2  3 #define PI (3.141592f)  4  5 int main(void)  6 {  7 float volume;  8 float radius;  9  10 printf("radius: ");  11 scanf("%f", &radius);  12  13 volume = (4.0f / 3.0f) \* PI \*  14 radius \* radius \* radius;  15 /\*  16 volume = (4 / 3) \* PI \*  17 radius \* radius \* radius;  18 // (4 / 3) = 1 ---> PI \* radius \* radius \* radius  19 \*/  20  21 printf("volume: %.2f \n", volume);  22  23 return 0;  24 } |
| 4. Write a program that asks the user to enter a dollars-and-cent amount, then displays the amount with 5% tax added:  1 #include <stdio.h>  2  3 int main(void)  4 {  5 float dollars\_and\_cents;  6  7 printf("Enter an amount: ");  8 scanf("%f", &dollars\_and\_cents);  9  10 printf("With tax added: $%.2f \n", dollars\_and\_cents \* 1.05f);  11  12 return 0;  13 } |
| 5. Write a program that asks the user to enter a value for x and then displays the value of the following polynomial:  1 #include <stdio.h>  2  3 int main(void)  4 {  5 int x;  6 int result;  7  8 printf("input: ");  9 scanf("%d", &x);  10  11 result = (((((  12 (3 \* x + 2)  13 \* x - 5)  14 \* x - 1)  15 \* x + 7)  16 \* x - 6)  17 );  18  19 printf("result: %d \n", result);  20  21 return 0;  22 } |
| 6. Modify the program of Programming Project 5 so that the polynomial is evaluated using following formula:  1 #include <stdio.h>  2  3 int main(void)  4 {  5 int x;  6 int result;  7  8 printf("input: ");  9 scanf("%d", &x);  10  11 result = (((((  12 (3 \* x + 2)  13 \* x - 5)  14 \* x - 1)  15 \* x + 7)  16 \* x - 6)  17 );  18  19 printf("result: %d \n", result);  20  21 return 0;  22 } |
| 7. Write a program that asks the user to enter a U.S. dollar amount and then shows thow to pay that amount using the smallest number of $20, $10, $5, and $1 bills:  1 #include <stdio.h>  2  3 int main(void)  4 {  5 int total\_dollars;  6  7 int dollar\_20, dollar\_10, dollar\_5, dollar\_1;  8  9 printf("Enter a dollar amount: ");  10 scanf("%d", &total\_dollars);  11  12 dollar\_20 = total\_dollars / 20;  13 total\_dollars = total\_dollars - dollar\_20 \* 20;  14  15 dollar\_10 = total\_dollars / 10;  16 total\_dollars = total\_dollars - dollar\_10 \* 10;  17  18 dollar\_5 = total\_dollars / 5;  19 total\_dollars = total\_dollars - dollar\_5 \* 5;  20  21 dollar\_1 = total\_dollars / 1;  22 total\_dollars = total\_dollars - dollar\_1 \* 1;  23  24 printf("$20 bills: %d \n", dollar\_20);  25 printf("$10 bills: %d \n", dollar\_10);  26 printf(" $5 bills: %d \n",dollar\_5);  27 printf(" $1 bills: %d \n", dollar\_1);  28  29 return 0;  30 } |
| 8. Write a program that calculates the remaining balance on a loan after the first, second, and third monthly payments:  1 #include <stdio.h>  2  3 int main(void)  4 {  5 float loan;  6 float interest;  7 float payment;  8  9 printf("Enter amount of loan: ");  10 scanf("%f", &loan);  11  12 printf("Enter interest rate: ");  13 scanf("%f", &interest);  14  15 printf("Enter monthly payment: ");  16 scanf("%f", &payment);  17  18 interest = (interest / 100.0f) / 12.0f + 1;  19  20 loan = loan \* interest;  21 loan = loan - payment;  22 printf("Balance remaining after first payment: $%.2f \n", loan);  23  24 loan = loan \* interest;  25 loan = loan - payment;  26 printf("Balance remaining after second payment: $%.2f \n", loan);  27  28 loan = loan \* interest;  29 loan = loan - payment;  30 printf("Balance remaining after third payment: $%.2f \n", loan);  31  32 return 0;  33 }  ~ |