Sheet 5

1. In the following expressions, determine the type of the expression and the value that present.
   
   (a) 5 + 3 * 4 / (2 + 4) / 2
   (b) (5 > 2) || (2 > 5)
   (c) 3 * 9 * (3 + (9 * 3 / (3)))
   (d) 2 % 2 + 2 *2 – 2 / 2
   (e) !(((5 > 2) || (2 > 5)) && (5 – 3 > 4))
   (f) 5!=7 ? 65 : 23+50

2. Evaluate the following mathematical Expressions:
   
   a. x = 10* 4 + 100 / 25
   b. x = (9 * 11 + 1) * 3
   c. x = 25 - (2 * (10 + (8 / 2)))
   d. x = 10 % 3 * 3 - (1 + 2)
   e. Z = (a > b) ? c : 1 (Note that a = 3, b = 7, c = 10)

3. Evaluate the following logical Expressions:
   Assume x is 15.0 and y is 25.0, what are the values of the following conditions?
   
   a. x != y
   b. x < y
   c. x >= y - x
   d. x == y + x - y

4. Evaluate each of the following expressions if a is 5, b is 10, c is 15, and flag is 1.
   
   a. c == a + b || !flag
   b. a != 7 && flag || c >= 6
   c. !(b <= 12) && a % 2 == 0
   d. !(a > 5 || c < a + b )

5. Find the output of the following C Programs:

   1.
   ```c
   #include <stdio.h>
   int radius, area;
   int main()
   { 
     int radius, area;
     printf( "Enter radius (i.e. 10): ");
     scanf( "%d", &radius );
     area = (int) (3.14159 * radius * radius);
     printf( "\n\nArea = %d\n", area );
     return 0;
   }
   ```
2.
1: #include <stdio.h>
2: int main()
3: {
4: int x, y;
5: x = 8;
6: y = 5;
7: printf("\n%d %d\n", x, y);
8: y -= x + 1;
9: printf("\n%d %d\n", x, y);
10: x += y / 2;
11: printf("\n%d %d\n", x, y);
12: x /= y;
13: printf("\n%d %d\n", x, y);
14: y %= 2;
15: printf("\n%d %d\n", x, y);
16: x *= y;
17: printf("\n%d %d\n", x, y);
18: return 0;
19: }

3. /*Logical operator precedence.*/
1: #include <stdio.h>
2: /*false.*/
3: int a = 5, b = 6, c = 5, d = 1;
4: int x;
5: main()
6: {
7: /* Evaluate the expression without brackets */
8: x = a < b || a < c && c < d;
9: printf("\nWithout parentheses the expression evaluates as %d\n", x);
10: /* Evaluate the expression with brackets */
11: x = (a < b || a < c) && c < d;
12: printf("\nWith parentheses the expression evaluates as %d\n", x);
13: return 0;
14: }