```c
// Mohamad.h /Ibrahim 2643344

#include <stdio.h>
int main() {
   int A, B, Bin, D, Bout, menu_num, base_num, hex_num;
   do {                                                  // check the menu number
       printf("Welcome to Full Subtractor!\n"
              "(1) Compute and Display the outputs\n"
              "(2) Quit\n"
              "You choose:");
       scanf("%d", &menu_num);
       if (menu_num == 2) break; // if menu num is 2 , it gets  out the loop
       else if (menu_num != 1) {
           printf("Invalid input, try again!\n");
           continue;
       }
       do {
           printf("Which base will you use to enter input (base 2 or base
16)?\n "); // ask for the input
           scanf("%d", &base_num);
           if (base_num != 2 && base_num != 16) printf("Invalid input is
given!\n");
       } while (base_num != 2 && base_num != 16);


       if (base_num == 2) {
           printf("you choose base of 2 \n");
           printf("Please enter your input:");
           scanf("%1d%1d%1d", &A, &B, &Bin);
       } else if (base_num == 16) {
           do {

               printf("you choose base of 16 \n");
               printf("Please enter your input:");
               scanf("%d", &hex_num);
               if (hex_num < 0 || hex_num > 7) { // print error
                   printf("Not possible to convert it to 3-digit binary
number\n");
                   continue;
               }
               switch (hex_num) { // switch case is the best option because we
have only 7 possible outcomes.
                   case 0:
                       A = 0, B = 0, Bin = 0;
                       break;
                   case 1:
                       A = 0, B = 0, Bin = 1;
                       break;
                   case 2:
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                    A = 0, B = 1, Bin = 0;
                    break;
                case 3:
                    A = 0, B = 1, Bin = 1;
                    break;
                case 4:
                    A = 1, B = 0, Bin = 0;
                    break;
                case 5:
                    A = 1, B = 1, Bin = 0;
                    break;
                case 6:
                    A = 1, B = 1, Bin = 0;
                    break;
                case 7:
                    A = 1, B = 1, Bin = 1;
                    break;
            }


        } while (hex_num < 0 || hex_num > 7);
    }
    // complex logic
    if ((((A && !B) || (!A && B)) && !Bin) || (!((A && !B) || (!A && B)) &&
Bin)) D = 1; else D = 0;
    if ((!A && Bin) || (!A && B) || (B && Bin)) Bout = 1; else Bout = 0;
    printf("D is %d Bout is %d\n", D, Bout);

} while (menu_num != 2);


if (menu_num == 2)
    printf("You have chosen option 2\n"
           "BYEE!!\n");
else {
    printf("the number you entered is invalid!");
}
return 0;
}
```