Program 1:

```c
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int main()
{ int total, count , x , y ;
   printf(" Dice Thrower\n ");
   printf("============\n ");
   do
   { printf("Total sought : "); scanf("%d",&total);
   } while ( total < 2 || total > 12);
   count = 0;
    do
    {
      x = (rand() % 6) + 1;
      y = (rand() % 6) + 1;
      count ++;
   printf("Result of throw %d: %d + %d\n",count , x , y);
   } while (x+y != total);
   if ( x+y == total){
   printf ("You got your total in %d throws!",count);
}
   return 0;
}
```

```
C:\Users\phamm\Documents\ws5 p1.exe
Dice Thrower
============
Total sought : 11
Result of throw 1: 6 + 6
Result of throw 2: 5 + 5
Result of throw 3: 6 + 5
You got your total in 3 throws!
--------------------------------
Process exited after 8.737 seconds with return value 0
Press any key to continue . . .
```

Program 2:

```c
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int main()
{ int total, count , x , y ;
   printf(" Ball Lottery \n ");
   printf("============\n ");
   do
   { printf("Total sought : "); scanf("%d",&total);
   } while ( total < 2 || total > 20);
   count = -1;
    do
    { count += 2;
      x = (rand() % 10) + 1;
      y = (rand() % 10) + 1;

   printf("Result of picks %d and %d: %d + %d\n",count, count + 1 , x , y);
   } while (x+y != total);
   if ( x+y == total){
   printf ("You got your total in %d picks!",count+1);
}
   return 0;
}
```

```
C:\Users\phamm\Documents\Ws5 p2.exe
Ball Lottery
============
Total sought : 11
Result of picks 1 and 2: 2 + 8
Result of picks 3 and 4: 5 + 1
Result of picks 5 and 6: 10 + 5
Result of picks 7 and 8: 9 + 9
Result of picks 9 and 10: 3 + 5
Result of picks 11 and 12: 6 + 6
Result of picks 13 and 14: 2 + 8
Result of picks 15 and 16: 2 + 2
Result of picks 17 and 18: 6 + 3
Result of picks 19 and 20: 8 + 7
Result of picks 21 and 22: 2 + 5
Result of picks 23 and 24: 3 + 4
Result of picks 25 and 26: 3 + 3
Result of picks 27 and 28: 2 + 7
Result of picks 29 and 30: 9 + 6
Result of picks 31 and 32: 8 + 7
Result of picks 33 and 34: 2 + 9
You got your total in 34 picks!
--------------------------------
Process exited after 8.516 seconds with return value 0
Press any key to continue . . .
```

Program 3:

```c
#include<stdio.h>
#include<stdlib.h>
int choice()
{ int choice ;
   printf("      Menu      ");
   printf("\n1- Processing date data");
   printf("\n2- Character data");
   printf("\n3- Quit");
   printf("\nChoose: ");
   scanf("%d%*c",&choice);
   return choice;
}
    int validDate (int d, int m, int y){
    int maxd=31;
      if(d <1 || d>31 || m<1 || m >12) return 0 ;
      if( m ==4 || m == 6 || m ==9 || m == 11) maxd = 30;
      else if(m==2) {
        if ( y%400==0 || y%4==0 && y%100!=0 ) maxd=29;
        else maxd=28;
    }
    return d<=maxd;
}
    void function1(){
    int d , m , y;
    printf("Enter the day: " ); scanf("%d", &d);
    printf("Enter the month:"); scanf("%d", &m);
    printf("Enter the year: "); scanf("%d", &y);
        if (validDate(d, m, y)==1) {
    printf ("The date of %d/%d/%d is a valid date!\n", d, m ,y);
    }   else{
    printf("The date of %d/%d/%d is not a valid date!\n", d, m ,y);
    }
    }
    void printAscii(char c1 , char c2)
    { char c;
    if (c1 > c2)
```

```
C:\Users\phamm\Documents\Ws5 p3.exe
      Menu
1- Processing date data
2- Character data
3- Quit
Choose: 1
Enter the day: 20
Enter the month:12
Enter the year: 2022
The date of 20/12/2022 is a valid date!
      Menu
1- Processing date data
2- Character data
3- Quit
Choose: 2
 Enter 2 characters contiguously: 12
1:  49,  31h
2:  50,  32h
      Menu
1- Processing date data
2- Character data
3- Quit
Choose: 3
Bye!
```

```c
      printf ("The date of %d/%d/%d is a valid date!\n", d, m ,y);
      }   else{
      printf("The date of %d/%d/%d is not a valid date!\n", d, m ,y);
      }
    }
      void printAscii(char c1 , char c2)
    { char c;
    if (c1 > c2)
    { c=c1 ; c1=c2 ;c2=c ;
    }
      for ( c=c1 ; c<= c2; c++)
      printf("%c: %3d, %3Xh\n",c,c,c);
    }
    void function2()
    { char c1,c2;
      printf(" Enter 2 characters contiguously: ");
      scanf("%c%c",&c1, &c2);
      printAscii(c1,c2);
    }
    int main()
    { int userChoice;
    do
    { userChoice = choice();
    switch(userChoice)
    { case 1: function1(); break;
      case 2: function2(); break;
      default: printf("Bye!\n");
    }
    }
    while(userChoice > 0 && userChoice < 3);
    fflush(stdin);
    getchar();
    return 0;
}
```

Program 4:

```c
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int choice(){
  int choice ;
    printf("\n      Menu      ");
    printf("\n1- Quadratic equation ");
    printf("\n2- Bank deposit problem");
    printf("\n3- Quit");
    printf("\nChoose: ");
    scanf("%d%*c",&choice);
  return choice;
}
 void function1(){
   double number, squareRoot;
   printf("Enter a number: ");
   scanf("%lf", &number);
   squareRoot = sqrt(number);
   printf("Square root of %.0lf =  %.01f", number, squareRoot);
}
 void function2(){
   double x , r ,P;
   int y;
   printf("Enter your deposit[a positive number]:  ");scanf("%lf",&x);
   printf("\nEnter the yearly rate[0.0-1.0]:   "); scanf("%lf",&r);
   printf("\nHow many years you want to deposit[year>0]:"); scanf("%d",&y);
    P = x * pow((1+r),y);
   printf("\nAmount at the %d year is %.01f ",y,P);
}
int main(){
    int userChoice;
   do{
     userChoice = choice();
     switch(userChoice){
       case 1: function1(); break;
       case 2: function2(); break;
```

```
C:\Users\phamm\Documents\Ws5 p4.exe
      Menu
1- Quadratic equation
2- Bank deposit problem
3- Quit
Choose: 1
Enter a number: 20
Square root of 20 =  4
      Menu
1- Quadratic equation
2- Bank deposit problem
3- Quit
Choose: 2
Enter your deposit[a positive number]:  500

Enter the yearly rate[0.0-1.0]:   1

How many years you want to deposit[year>0]:10

Amount at the 10 year is 512000
      Menu
1- Quadratic equation
2- Bank deposit problem
3- Quit
Choose: 3
Have a nice day


--------------------------------
Process exited after 49.01 seconds with return value 0
Press any key to continue . . .
```

```c
int main(){
    int userChoice;
   do{
     userChoice = choice();
     switch(userChoice){
       case 1: function1(); break;
       case 2: function2(); break;
       default: printf("Have a nice day\n");
     }
   }
     while(userChoice > 0 && userChoice < 3);
     fflush(stdin);
     getchar();
     return 0;
}
```