Pointer Concept with Examples

Program 1: Write a program to know the size of the various data types on your system.

```
# include <stdio.h>
main( )
{
   printf ("n Size of a int = %d bytes", sizeof (int));
   printf ("\n Size of a float = %d bytes", sizeof (float));
   printf ("\n Size of a char = %d bytes", sizeof (char));
}
OUTPUT
Size of int = 2 bytes
Size of float = 4 bytes
Size of char = 1 byte
```

Program 2: Write a program to print the address associated with a variable and value stored at that address.

```
 /* Program to print the address associated with a variable and value stored at that
address*/

# include <stdio.h>
main( )
{
   int qty = 5;
   printf ("Address of qty = %u\n",&qty);
   printf ("Value of qty = %d \n",qty);
   printf("Value of qty = %d",*(&qty));
 }
OUTPUT
Address of qty = 65524
Value of qty = 5
Value of qty = 5
```

/* Program below demonstrates the relationships we have discussed so far */

```
# include <stdio.h>
main( )
{
  int qty = 5;
  int *ptr;
   /* declares ptr as a pointer variable that points to an integer variable
*/
  ptr = &qty;   /* assigning qty's address to ptr -> Pointer Assignment */
  printf ("Address of qty = %u \n", &qty);
  printf ("Address of qty = %u \n", ptr);
  printf ("Address of ptr = %u \n", &ptr);
  printf ("Value of ptr = %d \n", ptr);
  printf ("Value of qty = %d \n", qty);
  printf ("Value of qty = %d \n", *(&qty));
  printf ("Value of qty = %d", *ptr);
}
OUTPUT
Address of qty = 65524
Address of ptr = 65522
Value of ptr = 65524
Value of qty = 5
Value of qty = 5
Value of qty = 5
```
Try this as well:

/* Program that tries to reference the value of a pointer even though the pointer is uninitialized */

```
# include <stdio.h>
main()
{
   int *p;
 /* a pointer to an integer */
   *p = 10;
   printf("the value is %d", *p);
   printf("the value is %u",p);
}
```

Let us say,

int x; /* x is initialized to a value 10*/
p = &x;   /* Pointer declaration & Assignment */
*p=10;

Let us write the complete program as shown below:
```
# include <stdio.h>
main( )
{
   int *p;
/* a pointer to an integer */
   int x;
   p = &x;
   *p=10;
   printf("The value of x is %d",*p);
   printf("\nThe address in which the x is stored is %d",p);
}
```
OUTPUT
The value of x is 10
The address in which the x is stored is 52004