QUESTION NO 1

```cpp
#include<iostream>
using namespace std;
int main() {
    int size = 0;
    cout << "Enter the Size of the Array";
    cout << endl;
    cout << "----------------------------";
    cout << endl;
    cin >> size;
    int *arr = new int[size];
    int counter = 0;
    for (int i = 0; i < size; i++) {
        arr[i] = 0;
    }
    while (true) {
        cout << endl;
        cout << "Press 1 for the Index Insertion";
        cout << endl;
        cout << "--------------------------------";
        cout << endl;
        cout << "Press 2 for the Insertion";
        cout << endl;
        cout << "--------------------------------";
        cout << endl;
        cout << "Press 3 for To Print the Array";
        cout << endl;
        cout << "--------------------------------";
        cout << endl;
        cout << "Press 4 To Terminate";
        cout << endl;
        cout << "--------------------------------";
        cout << endl;
        int in;
        cin >> in;
        if (in == 1) {
            try {
                cout << "Enter the Index Number you want to insert";
                cout << endl;
                cout << "------------------------------------------";
                cout << endl;
                int inser;
                cin >> inser;
                if (inser >= 0 && inser < size) {
                    if(arr[inser]!=0){
                        cout << "Do yo want to over write the value if
yes Press 1 else press 2";
                        cout << endl;
                        cout << "-------------------------------";
                        cout << endl;
                        int n = 0;
                        cin >> n;
                        if (n == 1) {
                            cout << "Enter the Value to Insert";
                            cout << endl;
```

```cpp
                                        cout << "---------------------------------
";
                                        cout << endl;
                                        int value;
                                        cin >> value;
                                        arr[inser] = value;
                                    }
                                    else {
                                        break;
                                    }
                                }
                                else {
                                    cout << "Enter the Value to Insert";
                                    cout << endl;
                                    cout << "-------------------------------";
                                    cout << endl;
                                    int value2;
                                    cin >> value2;
                                    arr[inser] = value2;
                                }
                            }
                            else if (inser < 0 || inser>=size) {
                                throw(inser);
                            }
                        }
                        catch (int inser) {
                            cout << endl;
                            cout << "----------------------";
                            cout << endl;
                            cout << "Eception Throw";
                            cout << endl;
                            cout << "-------------------------";
                            cout << endl;
                            break;
                        }
                    }
                    if (in == 2) {
                        try {
                            cout << "Enter the value you want to insert";
                            cout << endl;
                            cout << "------------------------------------------";
                            cout << endl;
                            int value1;
                            cin >> value1;
                            if (counter >= 0 && counter < size) {
                                arr[counter] = value1;
                                counter= counter+1;
                            }
                            else if (counter < 0 || counter>=size) {
                                throw(counter);
                            }
                        }
                        catch (int counter) {
                            cout << endl;
                            cout << "Eception Throw";
                            cout << endl;
                            cout << "-------------------------";
```

```cpp
                    cout << endl;
                    break;
                }
            }
            if (in == 3) {
                cout << endl;
                cout << "Your Arry is";
                cout << endl;
                cout << "-------------------------";
                cout << endl;
                for (int i = 0; i < size; i++) {
                    cout << arr[i] << " ";
                }
            }
            if (in == 4) {
                break;
            }

    }
    system("pause");
    return 0;
}
```

OUTPUT

```
Enter the Size of the Array
---------------------------
1

Press 1 for the Index Insertion
-------------------------------
Press 2 for the Insertion
-------------------------------
Press 3 for To Print the Array
-------------------------------
Press 4 To Terminate
-------------------------------
2
Enter the value you want to insert
--------------------------------------------
4

Press 1 for the Index Insertion
-------------------------------
Press 2 for the Insertion
-------------------------------
Press 3 for To Print the Array
-------------------------------
Press 4 To Terminate
-------------------------------
2
Enter the value you want to insert
--------------------------------------------
10
```

Question no 2

A

```cpp
#include<iostream>
using namespace std;
int main() {
    int *number;
    cout << number << endl;
```

```cpp
        // unintialze pointer
        // Error will be Displyed as the pointer is not pointoing the int data type or int
int the Heap memory
        system("pasue");
        return 0;
}
```

Error Type

Syntex Error

Screen shot

Code	Description
C4700	uninitialized local variable 'number' used
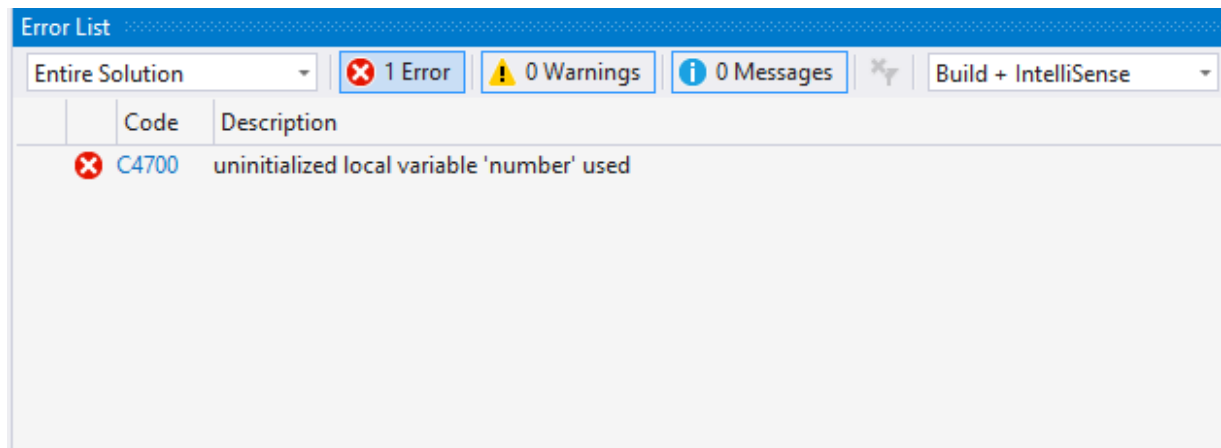
Solution

```cpp
#include<iostream>
using namespace std;
int main() {
        int *number=new int;
        cin >> *number;
        cout << *number << endl;
        system("pause");
        return 0;
}
```

2nd

```cpp
#include<iostream>
using namespace std;
int main() {
        int l = 0;
        int *number=&l;
        cout << *number << endl;
        system("pause");
        return 0;
}
```

B part

```cpp
#include<iostream>
using namespace std;
```

```cpp
int main() {
    double *realPtr;
    long *integerPtr;
    integerPtr = realPtr;
    // A pointer of same data type must be used to point
}
```

Error Type

Syntex Error

Screen shot

| abc | a value of type "double *" cannot be assigned to an entity of type "long *" |
| C2440 | '=': cannot convert from 'double *' to 'long *' |
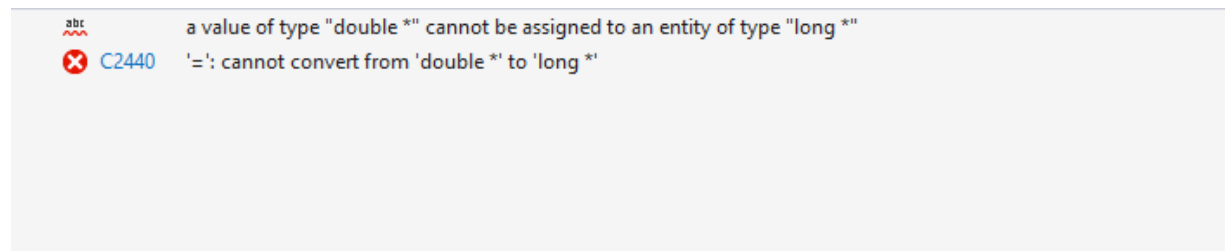
Solution

```cpp
#include<iostream>
using namespace std;
int main() {
    double l = 10;
    double *realPtr=&l;
    double *integerPtr;
    integerPtr = realPtr;
    cout << integerPtr;
    system("pause");
    return 0;
    // A pointer of same data type must be used to point
}
```

C

```cpp
#include<iostream>
using namespace std;
int main() {
    int * x, y;
    x = y;
    system("pause");
    return 0;
    // & operator is used to point the value
}
```

Error Type

Syntex Error

Screen shot

	Code	Description	Project	File	Line	Suppression State
abc		a value of type "int" cannot be assigned to an entity of type "int *"	Project2	Source.cpp	5	
❌	C2440	'=': cannot convert from 'int' to 'int *'	Project2	source.cpp	5	

Solution

```cpp
#include<iostream>
using namespace std;
int main() {
    int * x, y;
    x = &y;
    system("pause");
    return 0;
    // & operator is used to point the value
}
```

D

```cpp
#include<iostream>
using namespace std;
int main() {
    char s[] = "this is a character array";
    for (int ; *s != '\0'; ++s)
        cout << *s << ' ';
    system("pause");
    return 0;
    // can do incremet in the value of the char array without using the inialiazer in
the for loop
}
```

Error Type

Syntex Error

Screen shot

Code	Description	Project	File	Line	Suppression State
abc	expression must be a modifiable lvalue	Project2	Source.cpp	5	
❌ C2105	'++' needs l-value	Project2	source.cpp	5	

Solution

```cpp
#include<iostream>
using namespace std;
int main() {
    char s[] = "this is a character array";
    for (int i=0; s[i]!= '\0'; ++i)
        cout << s[i] << ' ';
    system("pause");
    return 0;
    // can do incremet in the value of the char array without using the inializer in the for loop
}
```

E

```cpp
#include<iostream>
using namespace std;
int main() {
    short *numPtr,result;
    void *genericPtr = numPtr;
    result = *genericPtr + 7;
    system("pause");
    return 0;
    // void pointer used without casting
}
```

Error Type

Syntex Error

Screen shot

Code	Description
abc	expression must be a pointer to a complete object type
❌ C2100	illegal indirection
❌ C2036	'void *': unknown size
❌ C2440	'=': cannot convert from 'void *' to 'short'

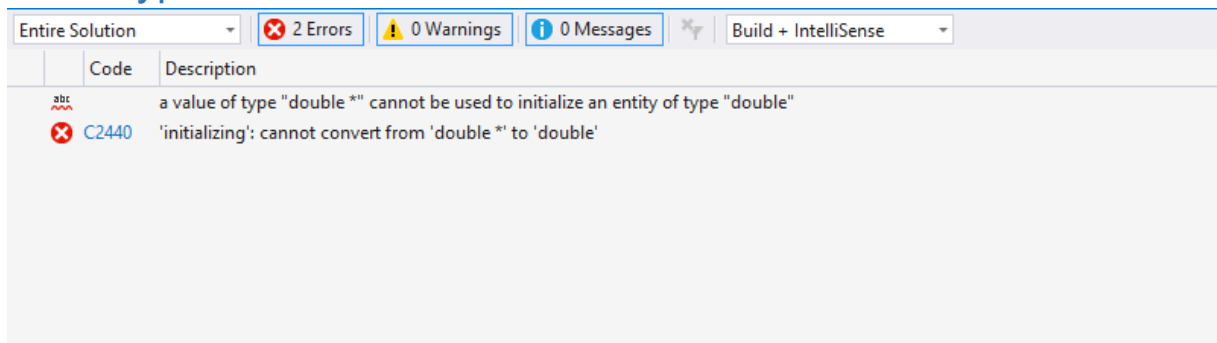## Solution

```cpp
#include<iostream>
using namespace std;
int main() {
    short i=0;
    short *numPtr=&i,result;
    void *genericPtr = numPtr;
    result = reinterpret_cast<short>(numPtr) + 7;
    system("pause");
    return 0;
    // void pointer used without casting
}
```

F

```cpp
#include<iostream>
using namespace std;
int main() {
    double x = 19.34;
    double xPtr = &x;
    cout << xPtr << endl;
    system("pause");
    return 0;
    // a pointer only adress to any data type

}
```

Error Type

	Code	Description
abc		a value of type "double *" cannot be used to initialize an entity of type "double"
❌	C2440	'initializing': cannot convert from 'double *' to 'double'

Entire Solution ❌ 2 Errors ⚠ 0 Warnings ℹ 0 Messages Build + IntelliSense

Solution

```cpp
#include<iostream>
using namespace std;
int main() {
    double x = 19.34;
    double *xPtr = &x;
    cout << xPtr << endl;
    system("pause");
    return 0;
    // a pointer only adress to any data type

}
```

QUESTION NO 3

```cpp
#include <iostream>
using namespace std;
void mystery1(char*, const char*); // prototype
int main()
{
    char string1[80];// string declearation
    char string2[80];
    cout << "Enter two strings: ";
    cin >> string1 >> string2;// asking the user to input the value
    mystery1(string1, string2);// calling the funtion to input the value
    cout << string1 << endl;//outputting the string 1
    system("pause");
    return 0;
} // end main
void mystery1(char* s1, const char* s2)
{
    while (*s1 != '\0')// increament in the indexes
        ++s1;
    for (; *s1 = *s2; ++s1, ++s2)// string concatination is done
        ; // empty statement
} // end function mystery1
```

Answer

1. Intilaize the two string
2. Asking the User to Enter the two String
3. Calling The Funtion Mystry1
4. While Loop is used to inscrement the index of the String
5. 2nd string is used for the Contincation i.e using the for loop
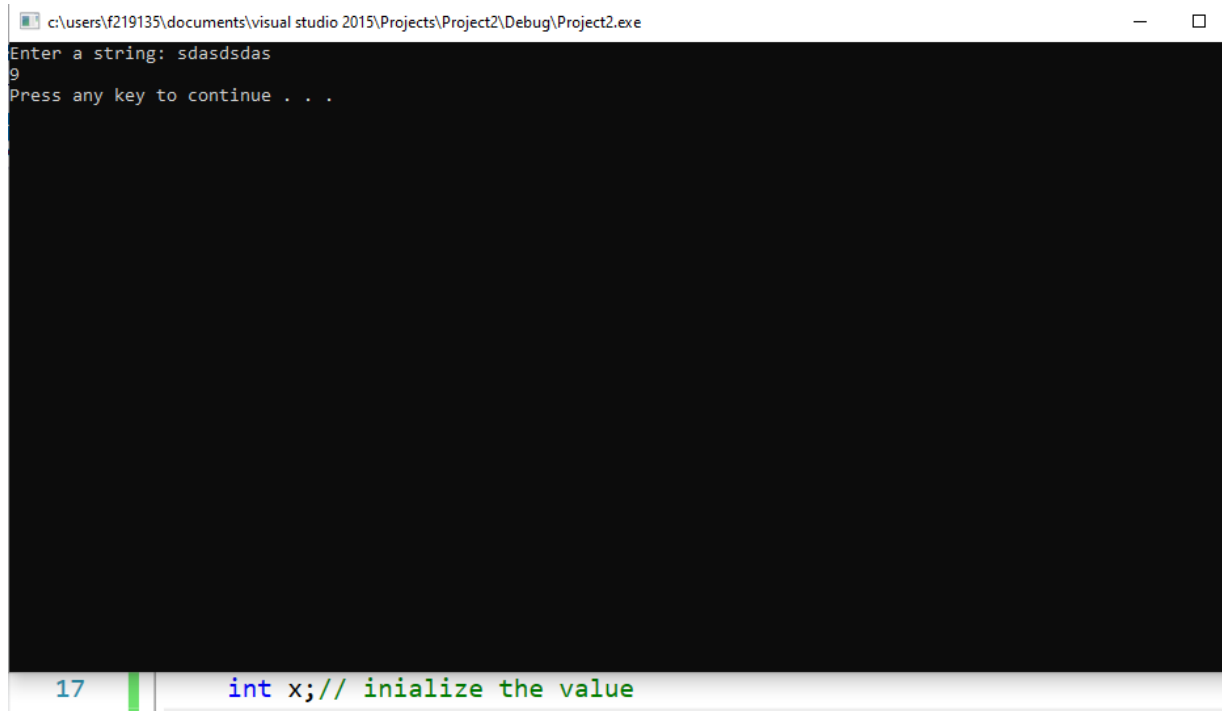6. Out put the Final inex

Screen shot

```
Enter two strings: ahmed
shayan
ahmedshayan
Press any key to continue . . .
```

QUESTION NO 3

```cpp
#include <iostream>
using namespace std;
int mystery2(const char*); // prototype
int main()
{
    char string1[80];// string decleration
    cout << "Enter a string: ";
    cin >> string1;// asking the user to input the value
    cout << mystery2(string1) << endl;// size of the String is used ;
    system("pause");
    return 0;

} // end main
  // What does this function do?
int mystery2(const char* s)
{
    int x;// inialize the value
    for (x = 0; *s != '\0'; ++s)
            ++x;//for loop finding the value
    return x;
} // end function mystery2
```

Screen shot

```
Enter a string: sdasdsdas
9
Press any key to continue . . .
```

```
17        int x;// inialize the value
```

Answer

1. Intilaize the string
2. Asking the User to Enter the String
3. Calling The Funtion Mystry2
4. While Loop is used to inscrement the index of the String to find the size
5. Out put the Final length of the string