

Pointers 1

Assignment Solutions



Q1 – Write a program to print the address of an integer variable whose value is input by the user.

We can use the '&' operator to get the address of the variable.

Code link – <https://pastebin.com/5Jkfaaw4>

```
main.cpp > main()
1  #include <bits/stdc++.h>
2  using namespace std;
3
4  int main()
5  {
6      int num;
7      cin >> num;
8      cout << &num;
9      return 0;
10 }
11
```

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Windows PowerShell
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Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS D:\Coding\cpp> cd "d:\Coding\cpp\" ; if (\$?) { g++ main.cpp -o main } ; if (\$?) { .\main }
10
0x61ff0c

Q2 – Write a program to find the product of 2 numbers using pointers

We can use 2 pointers to point to our 2 variables whose product we need. Then we can take their product by accessing their values through the dereference operator.

Code link – <https://pastebin.com/RzDyfY4P>

```
main.cpp > main()
1  #include <bits/stdc++.h>
2  using namespace std;
3
4  int main()
5  {
6      int num1, num2;
7      cin >> num1 >> num2;
8      int *ptr = &num1, *ptr2 = &num2;
9      int product = *ptr * *ptr2;
10     cout << product;
11     return 0;
12 }
13
```

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PS D:\Coding\cpp> cd "d:\Coding\cpp\" ; if (\$?) { g++ main.cpp -o main } ; if (\$?) { .\main }
3 5
15

Q3 – Write a function that returns the largest and the smallest number out of 3 given numbers. The main function should call this function to get the largest and smallest number and print the output.

In this question, we need to return 2 values. We are going to use pointers to return one of them and make the function return the other one.

Code link – <https://pastebin.com/8Y6xkraJ>

```
main.cpp > largestAndSmallest(int, int, int, int *)
1  #include <bits/stdc++.h>
2  using namespace std;
3
4  int largestAndSmallest(int num1, int num2, int num3, int *largest)
5  {
6      *largest = max(num1, max(num2, num3));
7      return min(num1, min(num2, num3));
8  }
9
10 int main()
11 {
12     int num1, num2, num3;
13     cin >> num1 >> num2 >> num3;
14     int largest;
15     int smallest = largestAndSmallest(num1, num2, num3, &largest);
16     cout << largest << ' ' << smallest;
17     return 0;
18 }
19
```

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```
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PS D:\Coding\cpp> cd "d:\Coding\cpp" ; if ($?) { g++ main.cpp -o main } ; if ($?) { .\main }
5 20 1
20 1
PS D:\Coding\cpp>
```

Q4 – Implement the swap function using pointers.

To swap the values of 2 variables, we can send both of them into our swap function as pointers. The swap function will work using a temp variable. To access the values of the variables, we'll use the dereference operator on the pointers.

Code link – <https://pastebin.com/M7q0YzdH>

```

G+ main.cpp > ...
1  #include <bits/stdc++.h>
2  using namespace std;
3
4  void swap(int *num1, int *num2)
5  {
6      int temp = *num1;
7      *num1 = *num2;
8      *num2 = temp;
9  }
10
11 int main()
12 {
13     int num1, num2;
14     cin >> num1 >> num2;
15     swap(num1, num2);
16     cout << num1 << ' ' << num2;
17     return 0;
18 }
19

```

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```

PS D:\Coding\cpp> cd "d:\Coding\cpp\" ; if ($?) { g++ main.cpp -o main } ; if ($?) { .\main }
3 5
5 3
PS D:\Coding\cpp>

```

Q5 - Write a function that returns the first character, last character and the number of occurrences of 't' in a string input by user.

In this question, we need to return 3 values. We are going to use pointers to return 2 of them and make the function return the third one.

Code link - <https://pastebin.com/zYEuZu9u>

```

main.cpp > main()
1  #include <bits/stdc++.h>
2  using namespace std;
3
4  int fun(string s, char *first, char *last)
5  {
6      *first = s[0];
7      *last = s[s.size() - 1];
8      int cnt = 0;
9      for (auto &ch : s)
10         if (ch == 't')
11             cnt++;
12     return cnt;
13 }
14
15 int main()
16 {
17     string s;
18     cin >> s;
19     char first, last;
20     int count = fun(s, &first, &last);
21     cout << first << ' ' << last << ' ' << count;
22     return 0;
23 }
24

```

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```

PS D:\Coding\cpp> cd "d:\Coding\cpp\" ; if ($?) { g++ main.cpp -o main } ; if ($?) { .\main }
twitter
t r 3

```