\*Pointer Exploration and Homework



In your teams complete exploration 1 and 2. Look at the code and think about it, debug code and then explain it. Then complete the homework before next class.

[Exploration: Variables 1](#_Toc1484228331)

[Exploration 2: Pointers 2](#_Toc1440178110)

[\*Pointer Discoveries 4](#_Toc54956519)

[Homework 1: \*p=\*p+1 and \*p++ 4](#_Toc272989636)

[Homework 2: Code Play Learn 5](#_Toc1883510789)

# 

# Exploration 1: Variables

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Think: Look at the code below and write what you think will happen  int var1 = -2;   |  |  | | --- | --- | | Code | What do you think | | printf ("var1: %d\n", var1); | Print out -2 | | printf ("&var1: %p\n", &var1); | Will print out the memory location | |
| Debug Code:  int var1 = -2;   |  |  | | --- | --- | | Code | What happened | | printf ("var1: %d\n", var1); | Print out -2 | | printf ("&var1: %p\n", &var1); | Printed out: 000000000062FE1C (mem location) | |
| Explain: Update comments to explain code and write a summary below. |

|  |
| --- |
| /\* Pointer Exploration  Add your own comments  \*/    #include <stdio.h>    int main (void)  {  // initialize variables  int var1 = -2;  // output value below is  // explain: printing %d or int number, therefore prints -2  printf ("var1: %d\n", var1);  // output value below is  // explain %p or pointer, there for print the memory location of variable  printf ("&var1: %p\n", &var1);  printf ("What is & operator used for?\n");  // add output to explain: the & is used to tell the program to look at the address of the operator  return 0;  } |

# 

# Exploration 2: Pointers

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Think: Look at the code below and write what you think will happen  int houseNum = 13;  int \*phouseNum = &houseNum;   |  |  | | --- | --- | | Code | What do you think | | printf ("variable houseNum: %d\n\n", houseNum); | 5 | | printf ("\*phouseNum d format specifier is %d\n\n", \*phouseNum); |  | | printf ("&houseNum using p format specifier is %p\n\n", &houseNum); |  | | printf ("phouseNum using the p format specifier is %p\n\n", phouseNum); |  | | printf ("&phouseNum using the p format specifier is %p\n\n", &phouseNum); |  | |
| Debug Code:  int houseNum = 13;  int \*phouseNum = &houseNum;   |  |  | | --- | --- | | Code | What Happened | | printf ("variable houseNum: %d\n\n", houseNum); |  | | printf ("\*phouseNum d format specifier is %d\n\n", \*phouseNum); |  | | printf ("&houseNum using p format specifier is %p\n\n", &houseNum); |  | | printf ("phouseNum using the p format specifier is %p\n\n", phouseNum); |  | | printf ("&phouseNum using the p format specifier is %p\n\n", &phouseNum); |  | |
| Explain: Update comments to explain code and write a summary below. |

|  |
| --- |
| /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Understanding pointers  \*\*\*\*\*\*\*\*\*\*\*\*\*\*/    #include <stdio.h>    int main ()  {  // Initalize houseNum  int houseNum = 13;    // \*phouseNum is called a FILL IN  // the variable is pointing to FILL IN  int \*phouseNum = &houseNum;  puts("Explore and explain\n");  // print value of houseNum  printf ("variable houseNum: %d\n\n", houseNum);    // Explain \*phouseNum  printf ("\*phouseNum d format specifier is %d\n\n", \*phouseNum);    // %p format specifier is used to  // Explain  printf ("&houseNum using p format specifier is %p\n\n", &houseNum);    // Explain  printf ("phouseNum using the p format specifier is %p\n\n", phouseNum);    // Explain  printf ("&phouseNum using the p format specifier is %p\n\n", &phouseNum);  return 0;    } |

# 

# Homework 1: \*p=\*p+1 and \*p++



Discover what happens when you add 1 to a pointer this way **\*phouseNum = \*phouseNum + 1** and this way **\*phouseNum ++.** Think about it first, next code it and then explain it.

\*phouseNum = \*phouseNum + 1;

|  |
| --- |
| Think: Look at the code below and write what you think will happen |
| Debug: Write down what happened. |
| Explain: Update comments to explain code and write a summary. |

\*phouseNum ++;

|  |
| --- |
| Think: Look at the code below and write what you think will happen |
| Debug: Write down what happened. |
| Explain: Update comments to explain code and write a summary. |

# Homework 2: Code Play Learn



Play around with pointers and make discoveries. Write up a summary of what you learned and explain the code you created. Include any resources you used that helped you. Some ideas to explore

* Try something you are wondering about
* Update your gas pump code
* More advanced: Play around with pointers and arrays

|  |
| --- |
| Think: |
| Code: Write down what happened. |
| Explain: Update comments to explain code and write a summary. |
| Resources: |
| Code you explored |

\*phouseNu ++;