

Array Examples

CSE 130: Introduction to C Programming
Spring 2005

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Program 1

- This program:
 - reads in a list of 10 integers
 - multiplies them together
 - prints their product
 - prints the list in reverse order

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```
#include <stdio.h>

/* constant declarations */
const int SIZE = 10; /* max elements in array */

int main (void)
{
    /* Variable declarations */
    int values[SIZE]; /* array to hold user input */

    int product = 1; /* product of user input */
    int i, temp; /* temporary variables */
```

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```
    /* Read in (SIZE) values from the user */
    for (i = 0; i < SIZE; i++)
    {
        printf("Enter a value: ");
        scanf(" %d", &temp);

        values[i] = temp;
    }
```

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```
    /* Compute the product of the values */
    for (i = 0; i < SIZE; i++)
        product = product * values[i];

    /* Print the product */
    printf("\n\nThe product is %d\n\n", product);
```

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```
    /* Print the list in reverse order */
    for (i = SIZE - 1; i >= 0; i--)
        printf("%d\n", values[i]);

    return 0;
}
```

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Program 2

- This program:
 - Generates a list of 200 random integers between 0 and 100
 - Counts the number of times each value occurs
 - Prints the number of times each value appears

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```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

/* Constant declarations */
const int SIZE = 200; /* # of values */
const int RANGE = 101; /* # of possible values */

int main (void)
{
    /* Variable declarations */
    int values[SIZE], counts[RANGE];
    int i, temp; /* temporary variables */
```

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```
/* Seed the random number generator */
srand(time(0));
```

```
/* Generate SIZE random integers */
for (i = 0; i < SIZE; i++)
{
    values[i] = rand() % RANGE;
}
```

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```
/* Initialize counts[] */
for (i = 0; i < RANGE; i++)
    counts[i] = 0;
```

```
/* Count # of occurrences */
for (i = 0; i < SIZE; i++)
{
    temp = values[i];
    counts[temp] = counts[temp] + 1;
}
```

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```
/* Print # of occurrences */

printf("Value\tOccurrences\n\n");

for (i = 0; i < RANGE; i++)
{
    printf("%d\t%d\n", i, counts[i]);
}

return 0;
}
```

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Next Time

- Functions
- Variable scope
- Recursion

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