Tute 4

COMP1511 23T1

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content

- functions
- scanning in loops
- arrays

assignment 1

- cs_defence, out now
- due Monday Week 7 (27th of March)

scanning in loops

```c
int main(void) {
    int number;
    while (scanf("%d", &number) == 1) {
        printf("%d\n", number)
    }
    return 0;
}
```

what happens when you type:

- a number?
- a letter?
- numbers with spaces between them?
- a double?
- `Ctrl+d`?

arrays

arrays store things of the same type sequentially

arrays and functions activity

in groups, write the following functions, swap who is holding the pen after each instruction

instructions

Odd Only - `void odd_only(int array[SIZE])`

e.g - `odd_only({3, 2, 3, 4, 5, -9});` (SIZE is 6 in this case)

1. Create a while loop which loops through every element of the array.
2. Write an if statement which adds 1 to each even value. Do this within the while loop.

Copy Array - `void copy_array(double from[SIZE], double to[SIZE])`

e.g - `copy_array({3.1415, 2.71828, 1.4142}, {0.0, 0.0, 0.0});` (SIZE is 3 in this case)

1. Create a while loop that loops through every element of the first array.
2. Copy the elements of the first array into the second array

Print Array - `void print_array(int array[SIZE])`

e.g `print_array({5, 10, 15, 20})` (SIZE is 4 in this case)

1. Create a while loop that loops through each element in the array.
2. Print out each element
3. Modify your code so that the output is of the form "[5, 10, 15, 20]".

Largest Character - `char largest_character(char array[SIZE])`

e.g - `printf("%c\n", largest_character({'C', 'O', 'M', 'P', '1', '5', '1', '1'}));` (SIZE is 8 in this case)

1. Create a character variable called `largest_character`, equal to the first character of the array.
2. Create a while loop to loop through the character array.
3. Create an if statement to check if the current character has a higher ascii value than `largest_character`
4. Return the largest character you've found.

odd_only

```
void odd_only(int array[SIZE]) {
    // 1. Create a while loop which loops through every element of the array.
    int i = 0;
    while (i < SIZE) {
        // 2. Write an if statement which adds 1 to each even value. Do this within the while loop.
        if (array[i] % 2 == 0) {
            array[i] = array[i] + 1;
        }
        i++;
    }
}
```

copy_array

```
void copy_array(double from[SIZE], double to[SIZE]) {
    // 1. Create a while loop that loops through every element of the first array.
    int i = 0
    while (i < SIZE) {
        // 2. Copy the elements of the first array into the second array (leave 0's at the end)
        to[i] = from[i];
        i++;
    }
}
```

print_array

```
void print_array(int array[SIZE])
    int i = 0;
    // 3. open brackets
    printf("[")
    // 1. Create a while loop that loops through each element in the array.
    while (i < SIZE) {
        // 2. Print out each element
        printf("%d", array[i]);
        i++;

        // 3. Modify your code so that the output is of the form "[5, 10, 15, 20]".
        if (i != SIZE) {
            printf(", ")
        }
    }
    // 3. end the line
    printf("]\n");
```

largest_character

```
char largest_character(char array[SIZE]) {
    // 1. Create a character variable called largest, equal to the first character of the array.
    char largest = array[0];

    // 2. Create a while loop to loop through the character array.
    int i = 0;
    while (i < SIZE) {
        // 3. Create an if statement to check if the current character
        // has a higher ascii value than "largest_character"
        if (array[i] > largest) {
            largest = array[i]
        }

        i++
    }

    // 4. Return the largest character you've found.
    return largest
}
```

functions

live coding

- make_colour()
- get_main_colour()
- invert_colours()