

Subprogram Concept Review

COMP3220 – Principle of Programming Languages

2016 Spring

1 Parameter Passing

Note that `printf` prints the corresponding values. If you don't know the formatter in `printf`, just Google.

1. Consider the following code snippet.

```
#INCLUDE <stdio>

int n;

void foo(int k)
{
    n = n + 1;
    k = k + 4;
    printf("%d\n", n);
}

int main()
{
    n = 0;
    foo(n);
    printf("%d\n", n);
}
```

- (a) If parameter `k` is passed by value, what are the outputs?
- (b) If parameter `k` is passed by copy (i.e., passed by value-result), what are the outputs?
- (c) If parameter `k` is passed by reference, what are the outputs?

2. Consider the following code snippet.

```
#include <stdio>

void foo(int *p) {
    *p = 5;
    p = NULL;
}

int main()
{
    int x = 2;
    int* q = &x;

    foo(q);
    printf("%d\n%d\n", x, q == NULL);
}
```

Dose the program compile?

- (a) If yes, what are the outputs?
- (b) If no, what is the error?