# CSC 111—Fall 2013
# Quiz 4 Solutions

1. How is the following English statement translated into the programming language C?
   **if j is less than or equal to 0 AND k is NOT equal to 5 then x = 19**

   a. if (( j <= 0 ) || (k=5) {x = 19;}
   b. if (( j >= 0 ) & (k!=5)) {x = 19;}
   c. if (( j <= 0 ) AND (k = 5)) {x=19;}
   **d. if (( j <= 0 ) && (k!=5)) {x = 19;}**

2. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include<stdlib.h>
void foo(int *a) {
   *a = *a + 90;
} /*magic*/

int main(void) {
   int x = 10;
   foo(&x);  //call by reference
   printf("%d\n", x);
   x = 20;
   return EXIT_SUCCESS;
} /*main*/
```

   **a. 100**
   b. 10
   c. 90
   d. 20

3. In the C programming language, how do you refer to a file when you read, write or close a file?

   a. fopen()
   b. printf()
   **c. FILE* pointer**
   d. fgetc()

4. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
void kick(int* a, int b) {
   printf ("%d ", *a);     printf ("%d ", b);
   *a = *a * 2 + b;
   printf ("%d ", *a);     printf ("%d ", b);
} /*kick*/
int main(void) {
   int a = 5;   int b = 10;
   printf ("%d ", a);      printf ("%d ", b);
   kick(&a, b);
   printf ("%d ", a);      printf ("%d\n ", b);
   return EXIT_SUCCESS;
} /*main*/
```

**a. 5 10 5 10 20 10 20 10**

b. 5 10 10 5 20 10 20 5

c. 5 10 5 10 20 20 20 10

d. 5 10 5 10 25 10 25 10

5. Which function reads input from the console in the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
int main(void){
   int a, b, c, exp;
   printf("Enter three numbers: ");
   fflush(stdout);
   scanf("%d%d%d", &a, &b, &c);
   exp = a + b - c;
   printf("Expression = %d\n ", exp);
   return EXIT_SUCCESS;
} /*main*/
```

a. main()

b. printf()

c. fflush()

**d. scanf()**

6. How do you swap the values in variables a and b using the routine swap?

```
void swap(int* x, int* y) {
   int tmp = *x;
   *x = *y;
   *y = tmp;
} /* swamp */
```

a. int a = 3, b = 17; swap (3, 17);
b. int a = 3, b = 17; swap(a, b);
**c. int a = 3, b = 17; swap(&a, &b);**
d. int a = 17, b = 3;

7. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int x=5;
   int n;
   n = ++x;
   printf("Value of x is %d\n", x);
   printf("Value of n is %d\n", n);
   return EXIT_SUCCESS;
} /*main*/
```

a. Value of x is 5
   Value of n is 5
b. Value of x is 6
   Value of n is 5
c. Value of x is 5
   Value of n is 6
**d. Value of x is 6**
   **Value of n is 6**

8. Which of the following is not a valid function prototype in the C programming language?

a. int function (char a, char y);
b. int x();
c. void magic (int *a);
**d. long function(int a, int b)**

9. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int k = 15;
   printf(" Value of k = %d\n", k);
   int* p = NULL;
   p = &k;
   *p = 44;
   printf("Value of k or *p = %d\n", k);
   k = 13;
   printf("Value of k or *p = %d\n", k);
   *p = 33;
   printf("Value of k or *p = %d\n", *p);
   return EXIT_SUCCESS;
} /*main*/
```

a. Value of k = 15
Value of k or *p =15
Value of k or *p =13
Value of k or *p =44

b. Value of k = 15
Value of k or *p =13
Value of k or *p =13
Value of k or *p =33

**c. Value of k = 15**
**Value of k or *p =44**
**Value of k or *p =13**
**Value of k or *p =33**

d. Value of k = 15
Value of k or *p =15
Value of k or *p =15
Value of k or *p =15

10. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int x=5;
   int n;
   n = x++;
   printf("Value of x is %d\n", x);
   printf("Value of n is %d\n", n);
   return EXIT_SUCCESS;
} /*main*/
```

a. Value of x is 5
   Value of n is 5

**b. Value of x is 6**
   **Value of n is 5**

c. Value of x is 5
   Value of n is 6

d. Value of x is 6
   Value of n is 6

11. In the programming language C, which of the following expressions does not evaluate to true? Assume the following declarations:

```
int x = 17;
bool a = true;
bool b = true;
bool c = true;
```

a. x = 17
b. a && b
**c. !(a && b || c)**
d. x == 17

12. In the C programming language, how do you write a string of text into a text file?

a. Open a file and use printf()
b. Open a file and use fputc() repeatedly
**c. Open file and use fprintf()**
d. Use fread() to read data into the file

13. What is the output of the following C program?

```
#include <stdio.h>
#include <stdlib.h>
#include <stdbool.h>
int main(void) {
   bool a = 0;     bool b = 1;
   if (a && a) printf("Boolean Expr 1");
   if (b && b) printf("Boolean Expr 2");
   if ((a && a) || (b && b))  printf("Boolean Expr 3");
   printf("\n");
   return EXIT_SUCCESS;
} /*main*/
```

a. Boolean Expr 1 Boolean Expr 2

**b. Boolean Expr 2 Boolean Expr 3**

c. Boolean Expr 1 Boolean Expr 3

d. No output produced

14. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
#include <stdbool.h>
int main(void) {
   int a = 10;  int c;  int* b;
   b = &a;  c = *b;
   if (&a == b  && c == *b) {
      printf("CSC111");
   } else {
      printf("Boolean");
   } /*if*/
   return EXIT_SUCCESS;
} /*main*/
```

a. false

b. true

**c. CSC111**

d. Boolean

15. What is the output of the following syntactically correct C program?

```
#include <stdio.h>
#include <stdlib.h>
#include <stdbool.h>
int main(void) {
   int k = 5;
   bool smallNumber = false;
   while(smallNumber) {
      printf("%d ", k);
      k = k - 1;
       if (k <5) smallNumber = true;
   } /* while */
   printf("Done\n");
   return EXIT_SUCCESS;
} /* main */
```

a. 5 4 3 2 1 0 Done

b. 1 2 3 4 5 Done

**c. Done**

d. 0 1 2 3 4 5