

90
100

CSC 111 Fall 2012 Midterm 1



- This is a closed books, closed notes, no gadgets, and no electronic devices midterm.
- Turn in your completed midterm at the front of the class.
- Leave through the front door on your left.

1. For the following statements, check the correct circle.

The C preprocessor

- ☒ 6 ☐ ☒ ☐ ☐
- compiles C programs
 - includes text files using #include and substitutes text using #define directives
 - builds an application or an executable
 - checks for semantic errors

2. How many proper identifiers are in each line according to C syntax? Enter the number for each line in the circle at the front of the line.

6 6

ABC aBc systematic B777 k 711 int mega %d

4 4

This/* is an */ identifier with a caveat

5 4

17.4 nine 19.6 forty-four hexadecimal k modulo output

7 8

Check for C++ and C# comments and keywords such as _for while long

3. What are the values of the following C expressions?

Assume the following C declarations and initializations:

int x = 3;

int a;

(x != 17)

3

TRUE

(0 > x || x > 9)

no output

FALSE

(a += 2 * (a = 19))

57

((x * 17) % 19)

13

4. Given the following two declarations and initializations, how do you store the value 17 into the integer variable x using pointer p? Check the correct circle.

int x = 3;

int* p = &x;

☐

p* = 17;

☐

x = 17;

☒

*p = 17;

☐

p = 17;

5. Consider the following syntactically correct C program.

#include <stdio.h>

#include <stdlib.h>

int main(void) {

printf("Google Zeitgeist\n"); return EXIT_SUCCESS;

}

How many function names appear in this program? Check the correct circle.

☐

0

☒

1

☐

2

☐

3

6. Who invented the C programming language? Check the correct circle.

☐

Niklaus Wirth

☐

James Gosling

☐

Brian Kernighan

☒

Dennis Ritchie

7. Given the following C declarations and initializations, create four pointer variables to point to these four variables.

int k = 17;

int* p = &k;

int* p;

char c = 'A';

char* q = &c;

char* cp;

float f = 3.14;

float* b = &f;

float* fp;

double d = 2.81;

double* j = &d;

double* dp;

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

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    int k = 21;
    while (k < 29) {
        if (k % 2 == 0) printf("%d ", k);
        k = k + 1;
    } /* while */
    printf("Common sense!\n");
    return EXIT_SUCCESS;
} /* main */
```

22, 24, 26, 28, 29

Output:

22 24 26 28 Common Sense!

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

(10)

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    int k = 5; int* p = &k;
    while (*p < 15) {
        printf("%d ", k);
        *p = *p + 1;
    } /* while */
    printf("Glee!\n");
    return EXIT_SUCCESS;
} /* main */
```

*p = k
5 < 15 ✓
*p = 5 + 1
6 < 15 ✓

Output:

5 6 7 8 9 10 11 12 13 14 Glee!

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

(10)

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    int k = 77;
    while (k > 47) {
        printf("%d ", k); k = k - 7;
    } /* while */
    printf("Software engineer #1!\n");
    return EXIT_SUCCESS;
} /* main */
```

77 > 47 ✓

k = 70

70 > 47 ✓

k = 70 - 7 = 63

63 > 47 ✓

k = 63 - 7 = 56

56 > 47 ✓

56 - 7 = k = 49

49 > 47 ✓

42 > 47 X

✓ Output:

77 70 63 56 49 Software engineer #1!

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

(10)

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    int k = 29;
    while (k > 31) {
        printf("%d ", k);
        k = k - 3;
    } /* while */
    printf("Time of your life!\n");
    return EXIT_SUCCESS;
} /* main */
```

29 > 31 X

k = 29 - 3 = 26

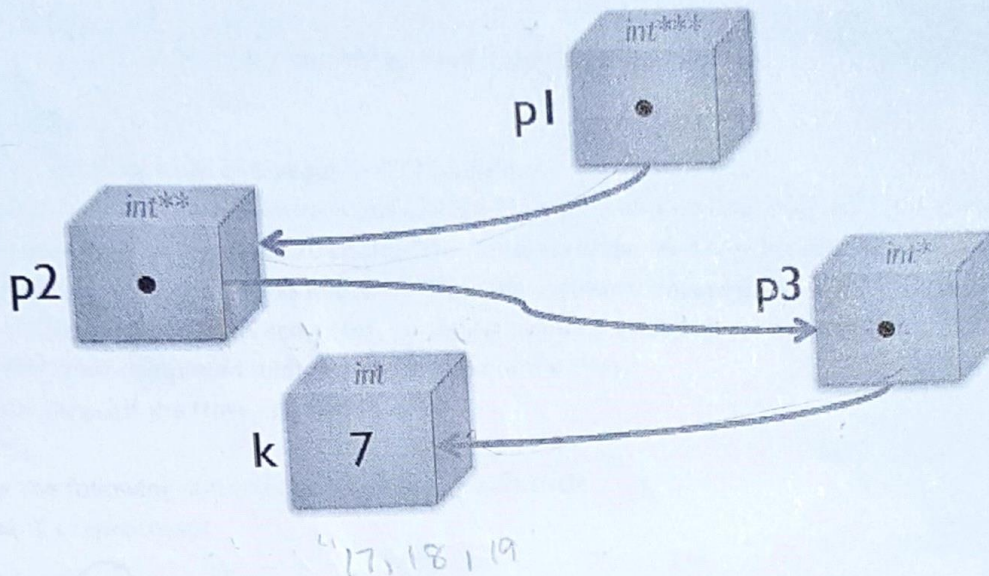
26 > 31 X

Output:

Time of your life!

(30)

12. In the box below, realize the following memory configuration exactly using C variable declarations and pointer assignments? Then store 17, 18, and 19 into variable k using pointers p1, p2, and p3, respectively.



```
int k = 7;
int** p3 = NULL; ✓
int** p2 = NULL; ✓
int** p1 = NULL;
```

```
p3 = &k;
*** p1 = &p2;
*p2 = &p3;
*** p1 = 17; ✓
** p2 = 18; ✓
* p3 = 19;
```

```
int k = 7
int** p3;
int** p2;
int** p1;
p3 = &k;
p2 = &p3;
p1 = &p2;
```

```
*** p1 = 17;
** p2 = 18;
* p3 = 19;
```

```
int k = 7
int** p3 = &k;
int** p2 = &p3;
int** p1 = &p2;
*** p1 = 17;
** p2 = 18;
* p3 = 19;
```