CSC 111 Fall 2013
Midterm 1

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Instructions

- This midterm consists of 5 pages and 11 questions.
- The first 5 questions are worth 6 points each for a total of 30 points. The last 6 questions are worth 10 points each for a total of 60 points. The complete midterm is worth 90 points.
- You have 70 minutes for this midterm. Time management—approximately 5 minutes per question.
- Attempt all questions.
- 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 and show your UVic ID.**
- Leave through the front door.

1. Consider the following syntactically correct C program.

```c
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    printf("CSC 111\n");
    return EXIT_SUCCESS;
}
```

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

   ○   0

   ○   1

   ✓   2

   ○   more than 2

2. How many formal parameters are there in this function header `int f(int s, float x)`

   ○   0

   ○   1

   ✓   2

   ○   more than 2

3. What are the values of the following C expressions?
    Assume the following C declarations and initializations:
    ```
    int x = 3;
    int a = 1;
    ```

    (x != 3) | false   *or*   0 |

    (0>x || x>9) | false   *or*   0 |

    (a += 2*(a - 19)) | -35 |

    ((x*17) % 2) | 1 |

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. For the following statements, check the correct circle.
    The C preprocessor

    ◯   compiles C programs

    ◯   builds an application or an executable

    ◯   checks for semantic errors

    ✔   includes text files using #include and substitutes text using #define directives

6. 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 ABC aBc _systematic B777 k 711 int mega %d

④ These/* are */ identifiers with a //caveat

⑤ 17.4 nine 19.6 forty-four hexadecimal k modulo output

⑦ Check for C C++ C# comments keywords such as _for while long

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

```c
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int k = 77;
   while (k > 47) {
       printf("%d  ", k);
       k = k - 10;
   }/*while*/
   printf("Finished\n");
   return EXIT_SUCCESS;
} /* main */
```

Output:

```
77  67  57  Finished
```

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

```c
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    int k = 21;
    while (k < 35) {
      if (k % 2 == 0)
        printf("%d\n ", k);
      k = k + 3;
    }/*while*/
    printf("Common sense!\n");
    return EXIT_SUCCESS;
} /* main */
```

Output:

```
   24
   30
   Common sense!
```

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

```
int k = 17;
```
```
int* kp = &k;
```

```
char c = 'A';
```
```
char* cp = &c;
```

```
float f = 3.14;
```
```
float* fp = &f;
```

```
double d = 2.81;
```
```
fouble* dp = &d;
```

10. What is the output of the following syntactically correct C program?
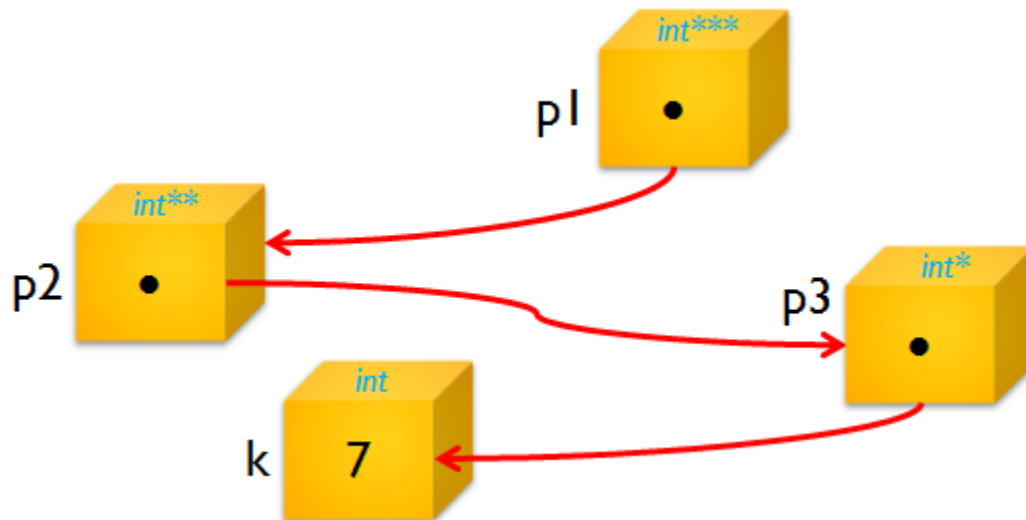
```
#include <stdio.h>
#include <stdlib.h>
/* function prototypes */
int main(void);
void f1(void);
void f2(void);
void f3(void);
void f4(void);

void f1() { printf("f1  "); f2(); }
void f2() { printf("f2  "); f4(); }
void f3() { printf("f3  "); f4(); }
void f4() { printf("f4  "); }
int main(void){
   printf("main ");
   f1();
   f3();
   printf("Bye\n");
   return EXIT_SUCCESS;
}
```

Output:

```
main f1  f2  f4  f3  f4  Bye
```

11. 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 k = 7;

int* p3 = &k;   int* p3;

int** p2 = &p3;   int** p2;

int*** p1 = &p2;   int*** p1;

***p1 = 17;   p3 = &k;

**p2 = 18;   p2 = &p3;

*p3 = 19;   p1 = &p2;

                              ***p1 = 17;

                              **p2 = 18;

                              *p3 = 19;