컴퓨터의 기초 (Fundamentals of Computer System)

Final Exam
10 June 2009 (13:00 - 15:00)

2009 학년도 1 학기

1. Determine whether the following expression is true or false. (5)

a. 100>3 && 'a' > 'c'
b. x > y ? y > x: x > y
c. x >= y || y > x

2. What will the following program print? (10)

```c
#include <stdio.h>
int main(void)
{
        int i = 0;
        while ( i < 3) {
                switch (i++) {
                        case 0 : printf("blue ");
                        case 1 : printf("yellow ");
                        break;
                        case 2 : printf("white ");
                        default : printf("green ");
                }
                putchar ('\n');
        }
        return 0;
}
```


3. What will the following program print? (10)
 (Hint: printout may have part that repeating itself)

```c
#include <stdio.h>
int main(void)
{
```

```
        int age = 20;

        while (age++ <= 65)
        {
                if (( age % 20) == 0)  /* 20으로나누어떨어지는가? */
                        printf("%d세입니다. 승진할나이입니다.\n", age);
                if (age = 65)
                        printf("%d세입니다. 퇴직할나이입니다.\n", age);
        }
        return 0;
}
```

4. What is the difference between 'actual argument' and 'formal argument'.(5)

5. what will the following program print? And explain the procedure of computation. (10)

```c
#include <stdio.h>
long func(int n);
int main(void)
{
      int num = 5;
      printf("answer for %d: %ld\n", num, func(num));

      return 0;
}

long func(int n)
{
      long answer;
      if (n > 0)
              answer = n * func(n-1);
      else
              answer = 1;
      return answer;
}
```

6. What will the following program print? (10)

```c
#include <stdio.h>
int main(void)
{
        int ref[] = {2, 4, 6, 8};
        int *ptr;
        int index;

        for (index = 0, ptr = ref; index < 3; index++, ptr++)
                printf("%d %d %d\n", ref[index], *ptr, *(ptr+1));
        return 0;
}
```
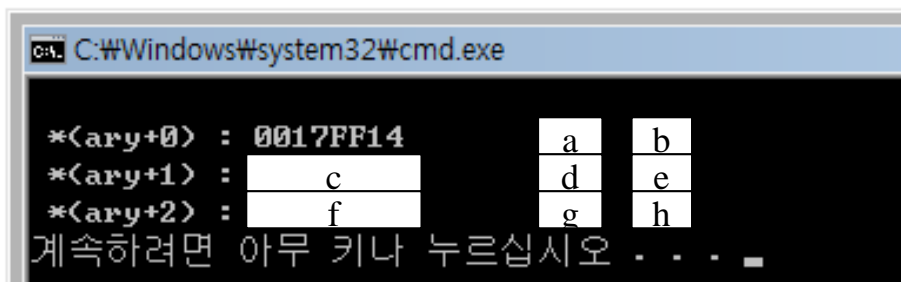

7. The printed portion is shown in the below that was produced by the following program. Fill out the blanks indicated from a to h. (10)

```c
#include <stdio.h>
int main(void)
{
        int ary[3][2] = {{1,2},{3,4},{5,6}};
        int i,j;

        for(i = 0; i < 3; i++) {
                printf("\n *(ary+ %d) : %p\t", i, *(ary+ i));
                for (j = 0; j < 2; j++)
                        printf("%5d", *(*(ary+ i)+ j));
        }
    printf("\n");

        return 0;
}
```



```
C:\Windows\system32\cmd.exe

*(ary+0) : 0017FF14      a     b
*(ary+1) :      c        d     e
*(ary+2) :      f        g     h
계속하려면 아무 키나 누르십시오 . . . _
```

8. The following program was supposed to make a file named snu.txt with the output shown in the below. Correct the errors in the program. (10)

```
int main(void)
{
        int * fp;
        int k;

        fp = fopen("snu.txt");
        for (k = 0; k < 5; k++ )
                fputs(fp, "Seoul National University.");
        fclose("snu.txt");
        return 0;
}
```

snu.txt 에 출력되는 부분.

Seoul National University.
Seoul National University.
Seoul National University.
Seoul National University.
Seoul National University.

9. Using fprintf function, write an expression that is identical with the expression below (5)

printf("SNU, %s₩n", name);

10. What will the following program print? (5)

```
#include <stdio.h>
struct book {
        float price;
        int volume;
        int issue;
        char publisher[40];
};
```

```c
int main(void)
{
        struct book mybook = {300.0, 5, 2, "Elsevier"};
        struct book *card;

        card = &mybook;
        printf("%d %d\n", mybook.volume, card->issue);
        printf("%s \n", mybook.publisher);
        printf("%c %c\n", card->publisher[3], mybook.publisher[4]);
        return 0;
}
```


11. The following program calculate and print the gross payment, tax and net payment based on the input of worked hours. The calculation is based on the information below. Make a complete program by filling out the blanks. (20)

    - 주급(Basic pay rate) = $5.00/hour
    - Overtime pay rate, in excess of 40 hours = $7.00/hour
    - Overtime pay rate, in excess of 50 hours = $8.00/hour
    - tax rate: 10 % (0 ~ $300)
                  20% ($300 ~ $400)
                  30% ($400 ~)

```c
1  // 주당 일한 시간을 입력받은 후 주급, 세금, 세후 주급 총액을 계산하여 출력하는 프로그램
2  #include <stdio.h>
3  #define P_RATE1 5.00             // 기본 시급
4  #define P_RATE2 7.00             // 첫 번째 초과 시급
5  #define P_RATE3 8.00             // 두 번째 초과 시급
6  #define P_B01 40    // 시급의 첫 번째 초과 기준: 40시간
7  #define P_B02 50    // 시급의 두 번째 초과 기준: 50시간
8  #define T_RATE1 0.1              // 첫 번째 구간세율
9  #define T_RATE2 0.2              // 두 번째 구간세율
10 #define T_RATE3 0.3              // 세 번째 구간세율
11 #define T_B01 300   // 세율의 첫 번째 구간 기준 액수: $300
12 #define T_B02 400   // 세율의 두 번째 구간 기준 액수: $400
13
14 int main(void)      // main 함수 시작
15 {
16     double hours;    // 주당 총 일한 시간
17     double gross;    // 세전 주급 총액
18     double taxes;    // 세전 주급 총액에 대한 세금 총액
19     double net;      // 세후 주급 총액 (net pay)
20
21     printf("Please enter the hours you worked in a week: ");
22     scanf_s("%lf", &hours);
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42
43     // 결과 출력
44     printf("\nYou worked %.2f hours in a week.\n", hours);
45     printf("the gross pay: $%.2f, the taxes: $%.2f, the net pay: $%.2f\n", gross, taxes, net);
46
47     return 0;
48 }                        // main 함수 끝
```