

Introduction to Computer Science

Tutorial 5: Assignment Operators, For statement and Comma operator.

1. Assignment Operators

Write the following assignments only using the assignment (=) operator:

- | | | |
|-----------|------------|---------------|
| a. $x+=y$ | e. $a*=5$ | i. $x\&=1024$ |
| b. $y-=x$ | f. $x/=7$ | j. $y =z$ |
| c. $x++$ | g. $b>>=a$ | k. $x\%=4096$ |
| d. $z--$ | h. $p<<=q$ | l. $x^-=2$ |

2. For statement

Manual execute the following programs:

```
/*2.1*/
void main() {
    int limit = 5;
    int evenSum = 0;
    int oddSum = 0;
    for (int i = 0; i < limit; i++) {
        if (i % 2 == 0) {
            evenSum += i;
        }
        else {
            oddSum += i;
        }
    }
}
```

```

/*2.2*/
void main() {
    int limit = 10;
    int sum = 0;
    for (int i = 0; i < limit; i+=2) {
        if (i % 2 == 0) {
            continue;
        }
        sum += i;
    }
}

```

```

/*2.3*/
void main() {
    int limit = 0;
    int product = 0;
    for (int i = 6; i > limit; i--) {
        product += i;
        if (product <= i * 2) {
            continue;
        }
        product *= 2
    }
}

```

3. Linear accumulation with for

Translate the following summations to C programs with for statements:

a. $\sum_{i=0}^{1024} i$

d. $\sum_{i=0}^{10} \frac{i}{2}$

b. $\sum_{i=1}^{10} \frac{36}{i}$

e. $\sum_{i=1}^{100} i * \sum_{k=1}^i k * \sum_{j=1}^k j$

c. $\sum_{i=0}^{10} i^i$

f. $\frac{\sum_{i=0}^{10} 2 * i}{\sum_{i=0}^5 4 * i}$

4. Comma operator

Rewrite the following C programs without using the comma operator and correctly indenting them:

```
/*4.1*/
#include <stdio.h>
int main() {int i,
number=(i=1, 1000); while(((number % i == 0 ? printf("%d\n", i):
0),i++, i< number));return 0;}
```

```
/*4.2*/
#include <stdio.h>
int main () {int a
```

```
,
b, number = 10; for(a=1;a< number; a++){for(b=1;b<number;
printf("%d^2 + %d^2 = %d\n",a, b,(a*a)+(b*b)),b++);} return 0;}
```