System Software Experiment 1
Lecture 2

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Jinkyu Jeong (jinkyu@skku.edu)
Computer Systems Laboratory
Sungyunkwan University
http://csl.skku.edu
Loops

• While

• Do ~ while

• For

• Switch

• break, continue
while

While(condition)
{
    //C statements
}

While the condition is satisfied, Statements are processed.
• While(1) : Infinite loop
• While(0) : No looping
✓ Count down numbers from input to 0
do ~ while

do
{
   //C statements
}while(condition);

Unlike while, the statement is processed at least one time.
for

for( initial setting ; condition ; increment or decrement ) {
    statements
}

int main(){
    int i;
    for( i=0; i<5; i++ ){
        printf("i = %d\n", i);
    }
}

✓ Calculate n terms of square natural number and their sum.
(ex. Input 5, output = 1 4 9 16 25, sum = 55)
switch

switch(variable or an integer expression)
{
    case constant:
        //C Statements
    case constant:
        //C Statements
    default:
        //C Statements;
}

Case 1
Val=1

Case 2
Val=2

Case def
Default
continue, break

• break : Escape out of the loop

```c
int num=0;
while(1){
    printf( "num = %d\n", num++ );
    break;
}
```

• continue : jump to next loop

```c
int main(){
    int i;
    for( i=0; i<10; i++ ){
        if( i % 2 )
        continue;
        printf( "i = %d\n", i );
    }
}
```
Exercise 1

• For given score, the program evaluate its grade.
• The program is over when it evaluates the grade 10 times.
• The number of students per grade should be printed out correctly after the program finishes.
• Use switch

<table>
<thead>
<tr>
<th>x</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;90</td>
<td>A</td>
</tr>
<tr>
<td>80&lt;=x&lt;=90</td>
<td>B</td>
</tr>
<tr>
<td>70&lt;=x&lt;=80</td>
<td>C</td>
</tr>
<tr>
<td>60&lt;=x&lt;=70</td>
<td>D</td>
</tr>
<tr>
<td>&lt;=60</td>
<td>F</td>
</tr>
</tbody>
</table>
Exercise 2

• Print out the least common multiple for given 3 numbers.
  Ex.
  $ 24$
  $ 36$
  $ 48$
  • LCD = 144

• Use while or do~while
Exercise 3

• Pascal’s triangle

• Use for statement