

# EECS 10: COMP METHODS IN ECE

## Discussion 5

Guantao Liu  
guantaol@uci.edu

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## Discussion Outline

- Concept review
  - Conditional statements
  - Repetition statements
  - Structured jump statements
- Assignment discussion
  - Pay off credit card debt

## Conditional Statements

- `if` statement
  - Handle one special case when the condition is true.
- `if-else` statement
  - Handle both cases when the condition is true or false.
  - Exclusive statement blocks for the `if` and `else` branches
- `switch` statement
  - Handle multiple cases as the value of the `switch` expression can have more than two values.

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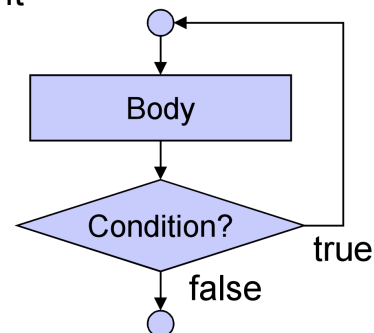
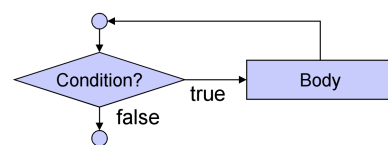
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## Repetition Statements

- `while` loop statement
 

```
while (condition) {
    body;
}
```
- `do-while` loop statement
 

```
do {
    body;
} while (condition);
```



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## Repetition Statements

- for loop statement

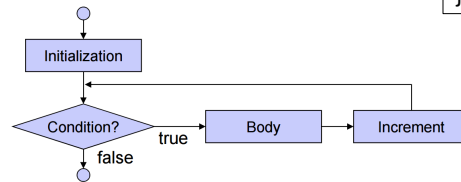
- Syntax

```
for (initialization; condition; increment/decrement)
{ body; }
```

- Example

```
for(i = 0; i < 10; i++)
{ printf("i = %d\n", i);
} /* eof */
```

```
initialization;
while (condition)
{
  body;
  increment/decrement;
}
```



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## Structured Jump Statements

- Structured jump statements

- break statement in switch statement
  - break and continue in while loop
  - break and continue in do-while loop
  - break and continue in for loop

- Arbitrary jump statements

- goto

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## break and continue

- `break`
  - It is very useful if you want to stop running a loop directly in the middle of the body block.
- `continue`
  - With `continue`, it is possible to skip the rest of statements in the current iteration and start a new iteration from the beginning.

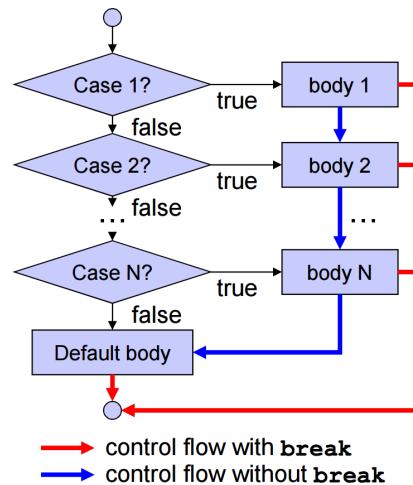
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## Structured Jump Statements

- `break` statement in `switch` statement



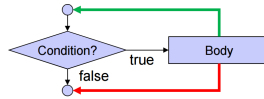
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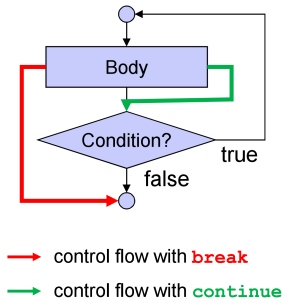
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## Structured Jump Statements

- break and continue in while loop



- break and continue in do-while loop



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## Example

```
int main()
{ // local variable declaration
  int a = 10;

  // do-while loop
  do {
    if (a == 15)
    {
      // skip the iteration
      a = a + 1;
      continue;
    }

    printf("value of a: %d\n", a);
    a = a + 1;
  } while (a < 20);

  return 0;
}
```

- value of a: 10
- value of a: 11
- value of a: 12
- value of a: 13
- value of a: 14
- value of a: 16
- value of a: 17
- value of a: 18
- value of a: 19

- 15 is missing. Why?

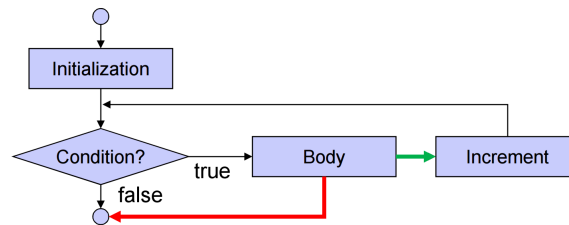
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## Structured Jump Statements

- `break` and `continue` in for loop



→ control flow with **break**

→ control flow with **continue**

## Assignment Discussion

- Problem 1 of Assignment 3
  - Before you implement your program, refer to Lecture 5, pp. 19-20 (`interest.c`)
  - Pay off credit card debt
    - Good exercise for formatted output
    - What is the input? What is the output?
    - What algorithm is used to solve the problem?
    - What is the control flow for this program?
    - How to implement this program
      - In the `interest.c`, `for` loop statement is used for repetition structure. In this assignment, it may not apply.
      - Which repetition structure do you use?

## Formatted Output

- Formatted output using printf()
  - Standard format sequence for floating point values
    - %[flags][width][precision][length][conversion]
  - Lecture 4, pp. 5~9

```

Enter the credit limit      :5000
Enter the balacne of the card :3000
Enter the APR              :16.99
Enter the monthly payment  :300

Month  Balance    Interest  Payment  New Balance
1      3000.00      42.47    300.00   2742.48
2      2742.48      38.83    300.00   2481.30
3      2481.30      35.13    300.00   2216.44
4      2216.44      31.38    300.00   1947.82
5      1947.82      27.58    300.00   1675.39
6      1675.39      23.72    300.00   1399.11
7      1399.11      19.81    300.00   1118.92
8      1118.92      15.84    300.00   834.77
9      834.77       11.82    300.00   546.58
10     546.58        7.74    300.00   254.32
11     254.32        3.60    257.92   0.00

It will take $3257.92 over 11 month to pay off this debt

```

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## Assignment Discussion

- Text file
  - Briefly describe your implementation by answering the questions in the previous slides.
- Typescript
  - Compilation of your program
  - Use the following data to verify your program
    - Credit limit: 5000
    - Balance of card: 3000
    - APR: 16.99%
    - Monthly payment: 300
- Name your files as **creditcard.c**, **creditcard.txt** and **credicard.script**.

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