CS 101: Computer Programming and Utilization

Shivaram Kalyanakrishnan
(Abhiram Ranade's slides, borrowed and edited)
Lecture 8

Today's Lecture

- if-else-if ladder
- Demo: from question to working program
- switch statement
- Conditional expressions in C++

Let us calculate income tax

Write a program to read income and print income tax, using following rules.

- If income ≤ 180,000, then tax = 0.
- If 180,000 ≤ income ≤ 500,000, then tax = 10% of (income - 180,000).
- If 500,000 ≤ income ≤ 800,000, then tax = 32,000 + 20% of (income – 500,000).
- If income > 800,000, then tax = 92,000 + 30% of (income – 800,000).

Today's Lecture

- if-else-if ladder
- Demo: from question to working program
- switch statement
- Conditional expressions in C++

Today's Lecture

- if-else-if ladder
- Demo: from question to working program
- switch statement
- Conditional expressions in C++

The switch statement

Execution

The `expression` is evaluated.

The resulting value is compared with `constant_1, constant_2,….`

If some `constant_i` is found equal:

- then all statements starting with group(i) statements are executed till the end of the switch statement. If a `break` statement is found, then execution stops.
- If any group of statements does not contain a break then the next group is executed.

If no `constant_i` is found equal to `expression`:

- then the default-group of statements is executed.

General form:

```
switch (expression){
  case constant_1:
     group(1) of statements
usually ending with
``break;''
  case constant_2:
     group(2) of statements
usually ending with
``break;''
  ...
  default:
     default-group of
statements
}
```

- The expression and constants must be integers.

Today's Lecture

- if-else-if ladder
- Demo: from question to working program
- switch statement
- Conditional expressions in C++

Conditional expressions

- The expression (a > b)? (5 + 2) : (5 * 3);
- evaluates to 7 if a > b, and to 15 otherwise.

- int a = 2, b = 6;
- int y = (a > b)? (5 + 2) : (5 * 3);
- cout << y;

- prints 15.