Switch Statement

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Objectives

 To implement selection control using switch statements (§3.13)

Outline

- Discussed
 - Boolean data type and Boolean expressions
 - If-statements (one-way, two-way, multi-way, and nested ifstatements) and their flow charts
 - Common errors and pitfalls
 - 3 ("big") programming problems (subtraction quiz, compute BMI, compute taxes)
 - Logical operators and two more ("big") programming problems (LeapYear, Lottery)
- Switch statement

Switch Statement

switch (status) {

case 0: compute taxes for single filers; break;

case 1: compute taxes for married file jointly; break;

case 2: compute taxes for married file separately; break;

case 3: compute taxes for head of household;

break;

default: System.out.println("Errors: invalid status");

System.exit(1);

}

Flow Chart of Switch Statement



Rules

The <u>switch-expression</u> must yield a value of <u>char</u>, <u>byte</u>, <u>short</u>, or <u>int</u> type and must always be enclosed in parentheses.

The <u>value1</u>, ..., and <u>valueN</u> must have the same data type as the value of the <u>switch-expression</u>. The resulting statements in the <u>case</u> statement are executed when the value in the <u>case</u> statement matches the value of the <u>switchexpression</u>. Note that <u>value1</u>, ..., and <u>valueN</u> are constant expressions, meaning that they cannot contain variables in the expression, such as $1 + \underline{x}$. switch (switch-expression) {
 case value1: statement(s)1;
 break;
 case value2: statement(s)2;
 break;

case valueN: statement(s)N;
 break;
default: statement(s)-for-default;

. . .

The break Statement

The keyword <u>break</u> is optional, but it should be used at the end of each case in order to terminate the remainder of the <u>switch</u> statement. If the <u>break</u> statement is not present, the next <u>case</u> statement will be executed.

The <u>default</u> case, which is optional, can be used to perform actions when none of the specified cases matches the <u>switch-expression</u>. switch (switch-expression) {
 case value1: statement(s)1;
 break;
 case value2: statement(s)2;
 break;
 ...
 case valueN: statement(s)N;
 break;
 default: statement(s)-for-default;
}

When the value in a **case** statement matches the value of the **switch-expression**, the statements *starting from this case* are executed until either a **break** statement or the end of the **switch** statement is reached.

Programming Problem. Display Chinese Zodiac

• Write a program that prompts the user to enter a year and displays the animal for the year.



Questions?