CS 152
Computer Programming
Fundamentals
Switch statements

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switch example

```
int myNumber = 10;
switch ( myNumber ) {
  case 1:
  case 2:
  case 3:
    System.out.println ( "You got 1, 2, or 3" );
    break;
  case 5:
    System.out.println ( "You got 5" );
    break;
  default:
    System.out.println ( "Some other number" );
}
```

Equivalent if statement

```
int myNumber = 10;
if(myNumber == 1 || myNumber == 2 || myNumber == 3) {
  System.out.println ( "You got 1, 2, or 3" );
} else if (myNumber == 5) {
  System.out.println ( "You got 5" );
} else {
  System.out.println ( "Some other number" );
}
```

The switch statement

- Tests value of expression and jumps to location in the switch statement.
- Expression is limited to certain types:
  - `int`, `short`, `byte`, `char`
  - `String`
  - *Cannot* be `float` or `double`
- Positions in switch are marked with *case labels* of the form `case` *`constant`*`:`, where *constant* is literal of same type as expression.
- Optional `default:` as last case.

Break statements in switch

- The `break` makes computer skip the rest of the switch statement.
- If you leave it out, computer will just fall through to next case.
- Occasionally want this (multiple cases handled same way)

new switch example

Forgetting the `break` statements is a common source of bugs. JDK 14 introduced a new style switch. (Note the arrow instead of colon for the cases)

```
int myNumber = 10;
switch ( myNumber ) {
  case 1, 2, 3 -> {
    System.out.println("You got 1, 2, or 3" );
  }
  case 5 -> System.out.println("You got 5" );
  default -> {
    System.out.println("Some other number" );
  }
}
```

Another example

```
String computerMove;

switch ( (int)(3*Math.random()) ) {
    case 0:
        computerMove = "Rock";
        break;
    case 1:
        computerMove = "Paper";
        break;
    case 2:
    default:
        computerMove = "Scissors";
        break;
}

System.out.println("Computer picks " + computerMove);
```

Switch expression

```
String computerMove =
  switch( (int)(3*Math.random()) ) {
   case 0 -> "Rock";
   case 1 -> "Paper";
   default -> "Scissors";
};

System.out.println("Computer picks " + computerMove);
```

Cases must be *exhaustive* with switch expressions.

Ternary Operator

This if statement is just being used to initialize `s`

```
int n = someNumber;
String s;
if(n < 10) {
  s = "small";
} else {
  s = "large";
}
```

We could rewrite it with a ternary expression instead.

```
int n = someNumber;
String s = n < 10 ? "small" : "large";
```