



Year 9 Computer Science - Computational Thinking



Data Types

| Data Type | Meaning |
|-----------|--|
| Integer | whole number e.g. 1,2,3,4 |
| Real | Decimal number e.g. 1.2, 3.7 |
| Character | A single character e.g. %, (, & |
| String | Ordered sequence of characters |
| Boolean | Produces a TRUE or FALSE output - AND, OR, NOT |

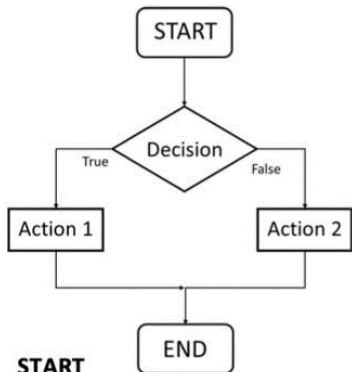
Boolean Operators

| Operator | Meaning |
|----------|--------------------------------|
| > | Greater than |
| < | Less than |
| == | Equal to |
| != | Not equal to |
| AND | Both conditions are true |
| OR | At least one condition is true |

Key Words

| Key Word | Meaning |
|------------------------|---|
| Computational Thinking | The ability to solve problems logically |
| Variable | A memory location where values are stored - locally or globally |
| Sequence | A set of instruction or actions in order |
| Selection | A decision which has one input and two possible answers |
| Iteration | Repeating actions a number of times (FOR) or until a condition is met (WHILE) |
| Syntax Errors | Mistakes in the way the code is written |
| Logic Errors | The logic is correct but the output is wrong |
| Runtime Errors | When a program is asked to do something it cannot - it crashes |
| Debugging | Identification and amendment of errors |

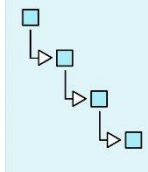
Selection (IF)



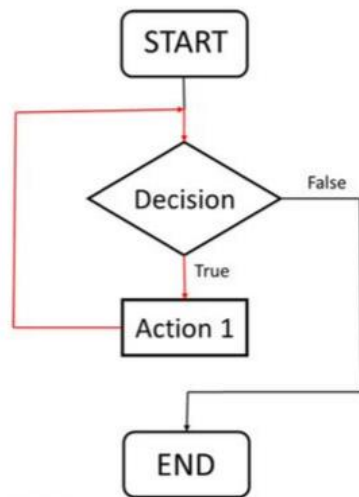
```

START
IF Decision = TRUE
  Go to Action 1
ELSE
  Go to Action 2
END IF
END
  
```

SEQUENCES



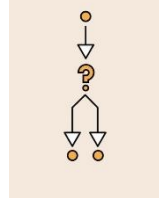
WHILE Loop



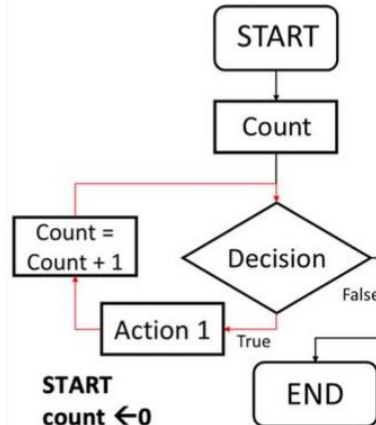
```

START
WHILE Decision = TRUE
  Go to Action 1
END WHILE
END
  
```

SELECTIONS



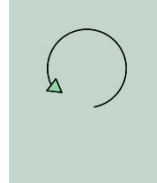
FOR Loop



```

START
count ← 0
REPEAT
  Go to Action 1
  count ← count + 1
UNTIL Decision is TRUE
END
  
```

LOOPS



Computational Thinking

| Decomposition | Pattern Recognition | Abstraction | Algorithm Design |
|---|--|--|--|
| Breaking down a problem into smaller, more manageable parts | Looking for similarities within problems | Focus on the important information only, ignoring irrelevant details | The creation of a step by step solution to the problem |
| | | | |

Mathematical Operators

| Addition | Subtraction | Multiplication | Division |
|----------|-------------|----------------|----------|
| + | - | * | / |