

Introduction to Programming in Turing

Initializing Variables & Setting Constant Values

Recall: Data Types

string – a string value is a collection of characters, such as a name, address, or other combinations of letters and numbers

int – an integer value is a positive or negative whole number (... , -3, -2, -1, 0, 1, 2, 3, ...)

real – a real number involves decimals, such as 0.5, 0.33, 10.7. You can also represent integers as reals, but try to avoid this (-3.0, 4.0)

Recall: Declaring Variables for: strings, integers, real numbers

```
var firstName : string
```

```
var age : int
```

```
var bankBalance : real
```

The keyword “var” is used to declare a variable. Then we give a meaningful name, and after the colon (:), identify the type of variable (string, int, real)

Recall: Assignment Operator

The assignment operator is the command where we assign a value to a variable.

The variable always goes on the left side, and the value (or expression, or calculation) goes on the right.

```
age := 16  
bankBalance := 123.45  
firstName := "Bob"
```

Initializing Variables

In some cases, we know the starting, or initial, value for our variables before the program starts. We set these values after declaring the variables.

```
% declare variables
var age : int
var bankBalance : real
var firstName : string

% initialize variables
age := 16
bankBalance := 123.45
firstName := "Bob"
```

Initializing Variables

In other cases, we don't know, or don't care, about the starting value. We then choose values to help us catch errors in our programs.

```
% declare variables
var age : int
var bankBalance : real
var firstName : string

% initialize variables
age := -1
bankBalance := -999.99
firstName := "Error!"
```

Constant Values

For some values, we never want them to change while the program is running. These are called constants.

```
% declare constants
const pi : real := 3.14
const maxTurns : int := 5

% declare variables
var age : int

% initialize variables
age := 16
```