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School of Science & Technology

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Decision Making and Flow Charts

Programming and Algorithms

Lecture by

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```
n = 3
for i in range(1,n+1):
    print("Hello World!")
```

```
Hello World!
Hello World!
Hello World!
```

What will we Cover?

- Introduction to flow charts
- Purpose of decision making in programming

Decision Making

There are problems that require us to check certain conditions in order to solve them

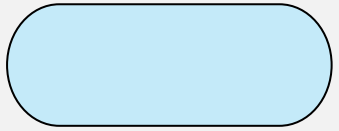
For example

- What to wear on a given day?
  - What is the temperature?
  - Is it likely to rain?
- Which movie to watch, a or b?
  - Which has higher reviews?
  - Has a friend recommended one of them?

Flow Charts

- Illustrative representation of a solution to a problem
- Show computational thinking step by step
- Utilise set of standard shapes (components) to
  - Organise problem-solving process
  - Display the information

Flow Chart Components I



Start/end – indicates the start or the end of a program

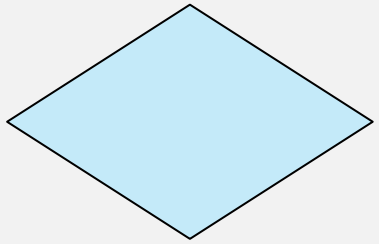
Flow arrow – indicates the order of execution in a program

Flow Chart Components II

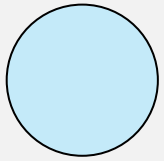
Input/output – indicates an input or output of the data in a program

Process – indicates a state change via a statement, an expression or a calculation

Flow Chart Components III

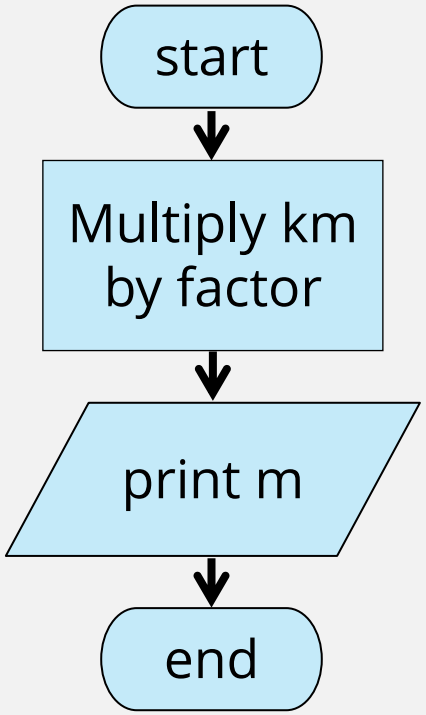


Decision – indicates a decision point in the flow of a program with Yes/No branches



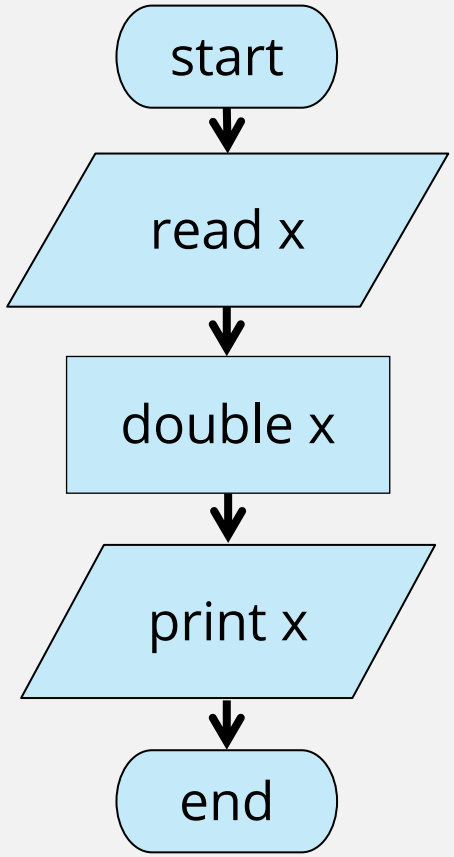
Connector – Pairs of labelled connectors help avoid confusion with long or crossing flow arrows in the chart

Flow Chart Examples I



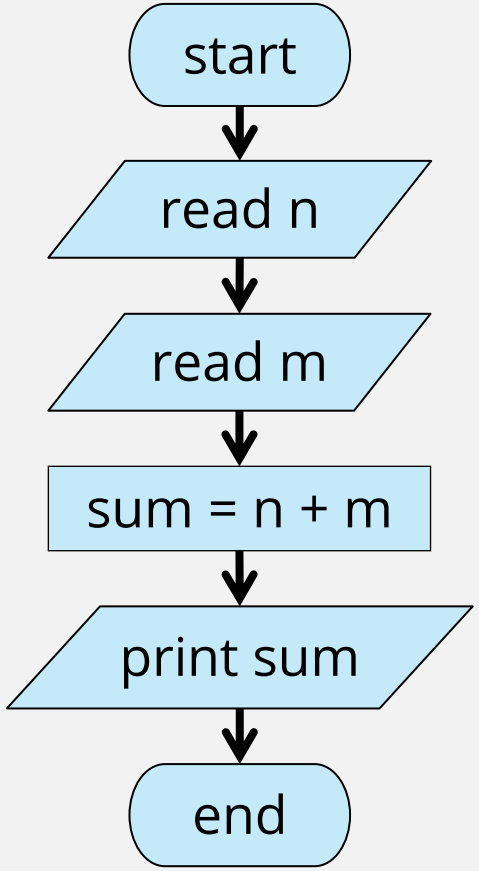

```
km = 5
factor = 1000
m = km * factor
print(m)
```

Flow Chart Examples II




```
x = int(input())
x = x * 2
print(x)
```

Flow Chart Examples III




```
n = int(input())
m = int(input())
sum = n + m
print(sum)
```

Try It Yourself

Draw flow charts for the following code examples:

```
x = 7
x = x + 5
X = x - 3
print(x)
```

```
name = input()
print(name)
```

```
y = int(input())
y **= 2
print(y)
```