

Validation/Verification



Objectives

At the end of the lesson students should be able to

- ▶ State the difference between data validation and data verification
- ▶ Explain the difference between the term software verification and validation
- ▶ Give examples of verification and validation



Validation and Verification

This can be of two types

- Data
- Software





Data Validation and Verification



Watch the video and make notes of salient points



Data validation

Data validation refers to the process of ensuring the accuracy and quality of data (data Integrity).

It is implemented by building several checks into a system or report to ensure the logical consistency of input and stored data.

It ensures that your data is complete, consistent and correct (CCC).



Types of Validation Checks

In Four (4) groups of three, create posters that will explain the following validation and Verification checks

Group 1

- Range Check
- Check digit (*show how the check digit is calculated*)

Group 2

- Lookup table
- Type check
- Limit check

Group 3

- Presence check
- Consistency check

Group 4

- Verification Check
- Double Entry
 - Proof Reading



Students' Presentation



Data Verification and Validation

Examples of different Types of Validation Checks

- ✓ Presence check - a username must be entered
- ✓ Length check - a password must be at least eight characters long
- ✓ Range check - age restrictions may require the user's date of birth to be before a certain date
- ✓ Format check - the user's date of birth must be entered in the specified format
- ✓ Type check - the password may need to have a mixture of upper- and lower-case letters, a number and a special character
- ✓ Look up check - the title must be from a pre-defined list of valid entries

Validation check	Description
Range check	Checks whether data is within given/acceptable values.
Length check	Checks if the input data contains the required number of characters.
Character/type check	Checks that the input data does not contain invalid characters.
Format/picture check	Checks that data is in a specific format.
Limit check	Similar to range check except that only <i>one</i> of the limits (boundaries) is checked.
Presence check	Checks if data is actually present and has not been missed out.
Consistency check	Checks if fields correspond (tie up) with each other.



Data Verification

Validation does not ensure that the data entered is correct, just that it is possible. A user may accidentally enter a date of birth that is possible, but incorrect. The program has no way of knowing that the date has been entered incorrectly.

Verification check ensures that data is correctly transferred into the computer from the source that it was originally stored.

There are two main methods of verification:

- Double keying - entering the data twice and comparing the two copies.
- Proof reading/screen/visual check - this involves someone checking the data entered against an original document. This is time-consuming and costly and is mainly used only for very important information such as the checking of ID.



Software Validation and Verification



Software Verification and Validation

- **Software Validation** is the process of checking whether the specification captures the customer's needs. "Did I build what I said I would?"
- **Software Verification** is the process of checking that the software meets the specification. "Did I build what I need?"

Have we built the software right?

Verification and Validation

Have we built the right software?



Verification	Validation
Are we building the system right?	Are we building the right system?
Is the process of evaluating products of a development phase to find out whether they meet the specified requirements.	Is the process of evaluating software at the end of the development process to determine whether software meets the customer expectations and requirements.
The objective is to make sure that the product being develop is as per the requirements and design specifications.	The objective is to make sure that the product actually meet up the user's requirements, and check whether the specifications were correct in the first place.
Following activities are involved in Verification : Reviews, Meetings and Inspections.	Following activities are involved in Validation : Testing like black box testing, white box testing, gray box testing etc.
Verification is carried out by QA team to check whether implementation software is as per specification document or not.	Validation is carried out by testing team.
Execution of code comes under Verification .	Execution of code comes under Validation .
Verification process explains whether the outputs are according to inputs or not.	Validation process describes whether the software is accepted by the user or not.
Verification is carried out before the Validation.	Validation activity is carried out just after the Verification.
Following items are evaluated during Verification : Plans, Requirement Specifications, Design Specifications, Code, Test Cases etc,	Following item is evaluated during Validation : Actual product or Software under test.
Cost of errors caught in Verification is less than errors found in Validation.	Cost of errors caught in Validation is more than errors found in Verification.
It is basically manually checking the of documents and files like requirement specifications etc.	It is basically checking of developed program based on the requirement specifications documents & files.



Validation & Verification



Learning Objective

11.1.2.5 explain the difference between the terms verification and validation

Lesson objectives

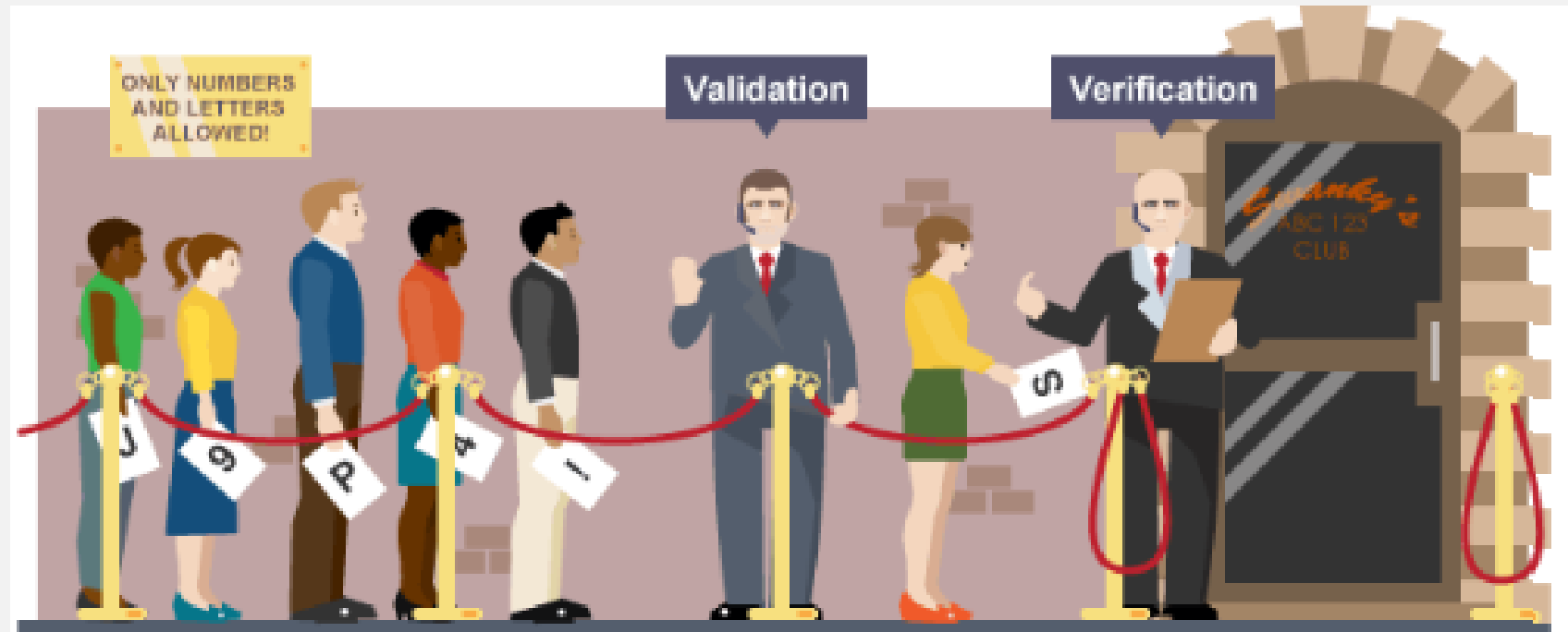
- Learners can explain the terms validation and verification;
- Learners can find the correct type of validation in situations;
- Learners know how add validation in project.

Assessment criteria

- Know the difference between validation and verification;
- Can add the validation to project.



Validation checks that the correct **type** of data is entered, whereas **verification** checks that the data is actually the **data you want**.



For example, validation checks that a postcode has been entered in the correct format and verification checks that the postcode being entered is the correct postcode.



Validation



Database fields should have **validation rules** to make sure the data entered follows the expected format.



Validation is a check made by a program to ensure that the data entered is reasonable.

NB: It cannot ensure that the data is correct!



Types of Validation

- Presence check
- Type check
- Format check
- Length check
- Lookup check
- Range check
- Check digit



Validation type	How it works	Example usage
Check digit	The last one or two digits in a code are used to check the other digits are correct	Bar code readers in supermarkets use check digits
Format check	Checks the data is in the right format	A National Insurance number is in the form LL 99 99 99 L where L is any letter and 9 is any number
Length check	Checks the data isn't too short or too long	A password which needs to be six letters long
Lookup table	Looks up acceptable values in a table	There are only seven possible days of the week
Presence check	Checks that data has been entered into a field	In most databases a key field cannot be left blank
Range check	Checks that a value falls within the specified range	Number of hours worked must be less than 50 and more than 0
Spell check	Looks up words in a dictionary	When word processing



Form Validation

https://www.w3schools.com/js/js_validation.asp



Verification

Verification is performed to ensure that the data entered exactly matches the original source.

There are two main methods of verification:

Double entry - entering the data twice and comparing the two copies. This effectively doubles the workload, and as most people are paid by the hour, it costs more too.

Proofreading data - this method involves someone checking the data entered against the original document. This is also time-consuming and costly.



Look at the video

- https://www.youtube.com/watch?v=gQrSxbfUjug&ab_channel=Udacity



Work with your project.

- Add validation of some fields in your project.

Criteria	Descriptor
Can add the validation to project	Correct add validation for email field
	Correct add validation for two different fields



Reflection

Have we met the learning objectives?

