Domanda 2

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Question 1 (Software quality) [20 mins]

- Describe the general concept of software quality and possible definitions/standards, also providing examples.
- Enumerate the qualities of the ISO 25010, for each of them provide the definition and possible ways to measure (indicators), also via examples.

Software quality:

1) Set of characteristics that are able to affect the ability of a sw to satisfy functional and non-functional requirements
2) The level at which the sw meets the users needs.

Standards: ISO 9000 (family of standards): quality management. -> ISO 9001: defines the concept of quality for an organization by the means of a quality manual and a quality policy.

ISO/IEC 9126: software quality (old version)

↳ ISO/IEC 25010: new version; defines the sw quality as 9 did in the first definition. Two types of sw quality (ISO/IEC 25010):

1) Quality in use: sw quality perceived by the user in using the sw in a particular context of usage. 5 characteristics:
   ① Effectiveness: # of reached goals wrt total goals of user
   ② Efficiency: effort wrt effectiveness
   ③ Satisfaction: degree to which user is satisfied in using the sw (e.g. aesthetics, comfort, ...)
   ④ Freedom From Risk: sw must not affect the social state of user (~~ex~~ economical state, social life, healthcare, ...)
   ⑤ Context Coverage: # of intended and unintended context of

usage of the sw perceived by users

2) Product Quality: quality of the sw product (i.e. rules, procedures, documentation and associated data). 8 characteristics:

① Functional suitability: degree of correctness, completeness and usefulness of the functionality provided by the sw

② Performance efficiency: level of resources utilization of the sw wrt its effectiveness

③ Compatibility: degree to which the sw is able to exchange info with other SW, that share the same hw/sw infrastructure

④ Usability: degree to which the sw is usable for users

⑤ Reliability: degree to which the sw is able to work correctly for a given period of time

⑥ Security: degree to which the sw is able to limit accesses to data that should not be seen/accessed from unauthorized people (confidentiality, authentication)

⑦ Maintainability: degree to which the sw is modifiable by the intended maintainers.

⑧ Portability: degree to which the sw is able to be ported between different architectures/infrastructures.