**Testing techniques lab session questions**

1.Do the boundary value analysis for the below scenario

A black rectangle with red text

Description automatically generated

Ans -

| **Test Case** | **Input Value** | **Expected Result** | **Reason** |
| --- | --- | --- | --- |
| Just below min | 17 | Invalid / Rejected | Below the allowed minimum (18) |
| On min | 18 | Valid / Accepted | Exactly the lower bound |
| Above min | 19 | Valid / Accepted | Just above minimum |
| Just below max | 55 | Valid / Accepted | Just below maximum |
| On max | 56 | Valid / Accepted | Exactly the upper bound |
| Above max | 57 | Invalid / Rejected | Above the allowed maximum (56) |

2. Do the boundary value analysis for the below scenario

A red lines on a white background

Description automatically generated

Ans:-

| **Test Case** | **Input Length** | **Example value** | **Expected Result** | **Description** |
| --- | --- | --- | --- | --- |
| Below min | 5 | abcde | Invalid (Rejected) | Just below minimum boundary |
| Minimum | 6 | abcdef | Valid (Accepted) | On the minimum boundary |
| Above min | 7 | abcdefg | Valid (Accepted) | Just above minimum boundary |
| Below max | 11 | abcdefghijk | Valid (Accepted) | Just below maximum boundary |
| Maximum | 12 | abcdefghijkl | Valid (Accepted) | On the maximum boundary |
| Above max | 13 | abcdefghijklm | Invalid (Rejected) | Just above maximum boundary |

3. **One of the fields on a form contains a text box which accepts numeric values in the range of 18 to 25. Identify the invalid Equivalence class.**

a)    17  
b)    19  
c)    24  
d)    21

**4. In an Examination a candidate has to score minimum of 24 marks in order to clear the exam. The maximum that he can score is 40 marks.  Identify the Valid Equivalence values if the student clears the exam.**

a)    22, 23, 26  
b)    21, 39, 40  
c)    29, 30, 31  
d)    0, 15, 22

**5. One of the fields on a form contains a text box which accepts alpha numeric values. Identify the Valid Equivalence class**

a)    BOOK  
b)    Book  
c)    Boo01k  
d)    Book

**6. The Switch is switched off once the temperature falls below 18 and then it is turned on when the temperature is more than 21. When the temperature is more than 21. Identify the Equivalence values which belong to the same class.**  
  
a)    12, 16, 22  
b)    24, 27, 17  
c)    22, 23, 24  
d)    14, 15, 19

**7. A program validates a numeric field as follows: values less than 10 are rejected, values between 10 and 21 are accepted, values greater than or equal to 22 are rejected. Which of the following input values cover all of the equivalence partitions?**  
  
a. 10, 11, 21  
b. 3, 20, 21  
c. 3, 10, 22  
d. 10, 21, 22

**8. A program validates a numeric field as follows: values less than 10 are rejected, values between 10 and 21 are accepted, values greater than or equal to 22 are rejected. Which of the following covers the MOST boundary values?**  
  
a. 9,10,11,22  
b. 9,10,21,22  
c. 10,11,21,22  
d. 10,11,20,21

**9. In a system designed to work out the tax to be paid:**  
**An employee has £4000 of salary tax free.**  
**The next £1500 is taxed at 10%.**  
**The next £28000 after that is taxed at 22%.**  
**Any further amount is taxed at 40%.**

To the nearest whole pound, which of these groups of numbers fall into three DIFFERENT equivalence classes?

a)    £4000; £5000; £5500  
b)    £32001; £34000; £36500  
c)    £28000; £28001; £32001

d)   £4000; £4200; £5600

**10. In a system designed to work out the tax to be paid:**  
**An employee has £4000 of salary tax free.**  
**The next £1500 is taxed at 10%.**  
**The next £28000 after that is taxed at 22%.**  
**Any further amount is taxed at 40%.**

To the nearest whole pound, which of these is a valid Boundary Value Analysis test cas

e?  
a)    £28000  
b)    £33501  
c)    £32001  
d)    £1500

**11. Given the following specification, which of the following values for age are in the SAME equivalence partition?**

If you are less than 18, you are too young to be insured.  
Between 18 and 30 inclusive, you will receive a 20% discount.Anyone over 30 is not eligible for a discount.

a)    17, 18, 19  
b)    29, 30, 31  
c)    18, 29, 30  
d)    17, 29, 31

**12. In a system designed to work out the tax to be paid:**  
An employee has £4000 of salary tax free. The next £1500 is taxed at 10% The next £28000 is taxed at 22% Any further amount is taxed at 40% To the nearest whole pound, which of these is a valid Boundary Value Analysis test case?  
a)    £1500  
b)    £32001  
c)    £33501  
d)    £28000

13. Order numbers on a stock control system can range between 10000 and 99999 inclusive. Which of the following inputs might be a result of designing tests for only valid equivalence classes and valid boundaries?  
a) 1000, 50000, 99999  
b) 9999, 50000, 100000  
c) 10000, 50000, 99999  
d) 10000, 99999, 100000

**14. A program validates a numeric field as follows:**  
**Values less than 10 are rejected, values between 10 and 21 are accepted, values greater than or equal to 22 are rejected. Which of the following input values cover all of the equivalence partitions**?  
  
a. 10, 11, 21  
b. 3, 20, 21  
c. 3, 10, 22  
d. 10, 21, 22

**15. An input field takes the year of birth between 1900 and 2004.**  
**The boundary values for testing this field are:**

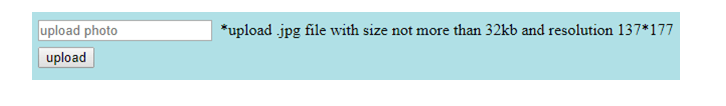
1. 0,1900,2004,2005  
   b. 1900, 2004  
   c. 1899,1900,2004,2005  
   d. 1899, 1900, 1901,2003,2004,2005

### 16 .Prepare the decision based table for the below scenario

### You can upload only ‘.jpg’ format image

1. file size less than 32kb
2. resolution 137\*177.

If any of the conditions fails the system will throw a corresponding error message stating the issue and if all conditions are met photo will be updated successfully



| **Test Case** | **File Format (.jpg)?** | **File Size (<32kb)?** | **Resolution (137x177)?** | **Expected Result / Output** |
| --- | --- | --- | --- | --- |
| 1 | No | — | — | Error: "Only .jpg format allowed" |
| 2 | Yes | No | — | Error: "File size must be <32kb" |
| 3 | Yes | Yes | No | Error: "Resolution must be 137x177" |
| 4 | Yes | Yes | Yes | Success: "Photo updated successfully" |

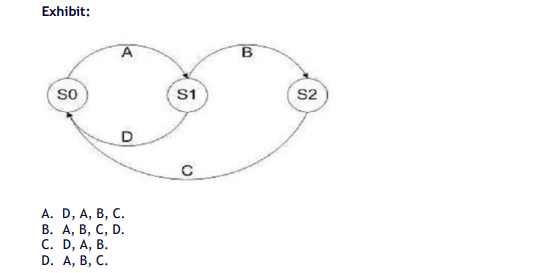
Ans:-

### 17. Prepare the decision based table for the below scenario

| Driver\_Age <25 | Accident\_Free | Driver\_Gender | Driver\_Educ | College | HS\_GPA <3.25 | HS\_GPA ≥3.25 | Surcharge |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Y | N | – | – | – | – | – | 0.20 |
| 2 | Y | Y | – | – | – | – | – | 0.00 |
| 3 | Y | – | F | – | – | – | – | 0.10 |
| 4 | Y | – | – | N | – | – | – | 0.15 |
| 5 | Y | – | – | – | N | – | – | 0.12 |
| 6 | Y | – | – | – | – | Y | – | 0.10 |
| 7 | Y | – | – | – | – | – | Y | 0.07 |
| 8 | N | Y | – | – | – | – | – | 0.00 |
| 9 | N | N | – | – | – | – | – | 0.07 |

### Ans:-

18: Given the following state transition table Which of the test cases below will cover the following series of state transitions? S1 SO S1 S2 SO



Ans:- State Transitions: S1 → S0 → S1 → S2 → S0

19 Given the following state transition diagram Which of the following series of state transitions contains an INVALID transition which may indicate a fault in the system design? Exhibit:

A diagram of a basket checkout

Description automatically generated

Ans:- A and C both contain an invalid state transition which may indicate a fault in the system design.

20. Consider the following state transition diagram of a switch. Which of the following represents an invalid state transition?

A diagram of a lock and a key

Description automatically generated

C. FAULT to ON

21. Provide examples of situations where error guessing might be an effective testing technique.

1. Input Validation Errors:  
   Testers guess errors related to invalid or unusual inputs, such as entering special characters where only alphabets are expected, providing empty values, or inputting excessively long strings.
2. Error Handling and Recovery:  
   Scenarios like simulating network failures, low memory conditions, or unexpected system states to check if the application handles these gracefully with proper error messages or recovery.
3. Boundary Conditions and Constraints:  
   Testing unusual combinations or boundary values beyond normal range, especially where formal boundary analysis might miss edge cases, like inputting negative numbers when only positive are expected.
4. Unusual User Interactions:  
   Guessing errors in cases of unexpected user actions, such as clicking buttons rapidly in sequence, using features in unusual order, or performing simultaneous conflicting actions.
5. Past Defect Patterns:  
   Applying knowledge about common errors found in similar applications or previous versions, like vulnerabilities in login/authentication pages (e.g., blank password fields, very long usernames, special characters).
6. File Uploads and Format Handling:  
   Testing with files that exceed size limits, use unsupported formats, or corrupt file content where formal tests may only check nominal cases.
7. Form Submission Without Required Data:  
   Trying to submit forms with missing mandatory fields or invalid fields to check if validations are robust.
8. Known Risk Areas from Experience:  
   Focusing on modules or features historically prone to defects due to complexity or past bugs.

22 . How does error guessing differ from other formal testing methods like boundary testing or equivalence partitioning?

* Basis of Approach:
  + *Error guessing* relies on the tester’s experience, intuition, and knowledge of past defect patterns to anticipate where errors might occur.
  + *Boundary testing* and *equivalence partitioning* are structured, formal techniques based on detailed analysis of input domains and requirements to systematically define test cases.
* Test Case Design:
  + In *error guessing*, test cases are not systematically derived—testers “guess” problematic inputs or situations (e.g., trying illegal characters, simulating network failure).
  + In *boundary testing*, test cases are built around the edges of input ranges (e.g., minimum, just above minimum, maximum, just below maximum).
  + In *equivalence partitioning*, test cases are designed to cover representative values from distinct partitions or groups that are expected to behave similarly.
* Documentation and Repeatability:
  + *Error guessing* is less formal, often lacking detailed documentation and exact repeatability.
  + *Boundary testing* and *equivalence partitioning* are well-defined, can be documented, repeated, and justified against requirements.
* Coverage:
  + *Formal methods* provide confidence that major input combinations and edge cases are tested, aiming for completeness.
  + *Error guessing* acts as a supplement, targeting likely, practical bugs that structured methods might miss, especially those arising from intuition or historical “surprise” issues.

23. Explain how domain knowledge and experience play a crucial role in error guessing during testing.

Domain knowledge helps testers understand the application’s context and typical user behavior, while experience enables them to use intuition and past defect patterns to anticipate where errors are likely, making error guessing more effective at finding hidden or unexpected bugs.