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DATE:

COMPLETEDTHEPROJECTNAMEDAS:IBM-NJ-ONLINEQUIZ APPLICATION

PHASE-TECHNOLOGYPROJECTNAME:NODEJS

SUBMITTEDBY,

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Phase5-ProjectDemonstration&Documentation

FinalDemoWalkthrough:

1. Introduction

- BriefOverview:Purposeoftheapplication(e.g.,skillassessment,internal training, recruitment).
- TechStack:Highlightbackend(Node.js/Java/SpringBoot),frontend (React/Angular), database

2. ApplicationWorkflow

UserRoles:

- Admin:Createsandmanagesquizzes.
- Candidate/User:Takes quizzesandviews results.
- Optional:Evaluator,Manager,etc.

3. DemoWalkthrough(LiveorScreenshots)

Login Page

- Role-basedlogin(adminvs. user)
- Securityfeatures(2FA,captcha,etc.)

Quiz Management (Admin)

- Create/edit/deletequizzes
- Questiontypes:MCQs,True/False,ShortAnswer
- Timersettings,difficultylevels

Results &Reports

- Auto-grading(forMCQs)
- Manualgrading(forsubjective questions)
- Scoredisplay,timetaken,correctvs.wronganswers
- Downloadablereports(PDF/Excel)

MConsulting Prep
IBM Recruitment Process
Step 1:
Online application
Step 2:
Online assessments
Step 3:
Interview/ Assessment center
• Access career website
• Fill the online form
• Attach CV
• Different types of tests based on the hiring position
• 3 formats: phone/ video/ in-person interviews
• Interviewed by several IBMers
• Group exercises
• In-person interview

2.Trymorespecificsearchterms.
Insteadofagenericsearch,includemoredetailsabouttheproject.Forexample:

- `"IBMSkillsBuild"quizapplicationfinaldemowalkthrough`
- `githubibmquizapplicationtutorialimages`
- `ibmdeveloperblog"onlinequiz" demo`
- `ibmcloudnativedevelopercoursequizappwalkthrough`

3.Checkprojectrepositories onGitHub.
ManyIBM-affiliatedorstudentprojectsarehostedonGitHub.

- Search GitHub for repositories with names like `"ibm quiz app"`or `"quiz application"`withinthe"IBM"organizationorunderthenamesofthedevelopers you might recall.

Project Report:

1. ExecutiveSummary

- **Purpose:**Aconciseoverviewexplainingtheproject'sgoal:tocreateaweb-based, multi-user online quiz application

Benefits: Briefly statetheadvantagesof thenewsystem,suchasimproved efficiencyforconductingassessments,enhancedlearningengagement,and secure data storage.

1. SystemAnalysisandRequirements

- **Existing system:** Analyze the current, manual process for conducting quizzes andidentifyitslimitations,suchaswastedtimeforgradingandtheriskofdata loss.

Functionalrequirements: Detailthespecificfeaturesforeachusertype:

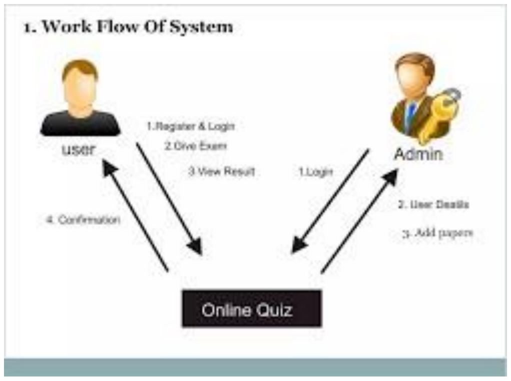
- **Admin/Instructor:**Create,edit,andmanagequizzes,questions,anduser accounts. Access reports on quiz results and user activity.

Non-functionalrequirements:

- **Performance:**Theapplicationmusthandlemultipleconcurrentuserswithout degrading performance.

2. SystemDesign

- **Architecture:** Explaintheoverall systemdesign.Aclient-serverormulti-tier architectureiscommonforwebapplications,withdistinctlayersforpresentation (front-end),businesslogic (back-end),and data storage.
- **Database design:** Describe the database schema, including tables for users, quizzes,questions,answers,andscores.AnEntity-Relationship(ER)diagramisa standard way to visualize this structure.



Screenshots/APIDocumentation:

ImportantpointsregardingAPI documentation

Whilethereisn't a single"quiz application API,"thedocumentation forplatforms like IBMAPIConnectrevealskeyprinciplesthatwouldapplytobuildingandmanagingsuch applications.

- **RESTfulAPIs:**IBMAPIConnectandotherdevelopmenttoolsfocusoncreating, securing, and managing RESTful APIs, which use standard HTTP methods like GET, POST, PUT, and DELETE. An API for a quiz application would likely be structured similarly.
- **APIlifecyclemanagement:**IBM'splatformmanagesAPIsthroughouttheir lifecycle, from development and testing to publication and monitoring.
- **Security:** APIs are designed with enterprise-grade security, including authenticationandauthorizationstandardslikeOAuth2.0andOpenIDConnect. This ensures only authorized users can access or modify quiz data.

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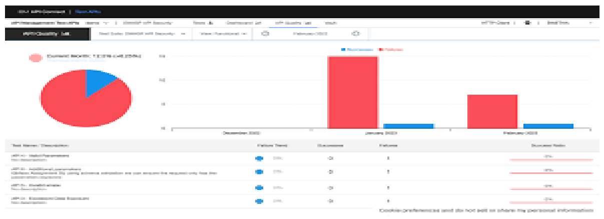
Screenshotinformation

DuetotheproprietarynatureofIBM'stoolsanditsuseofthird-partyplatforms,generic "screenshots" are not available. The specific appearance of an online quiz or assessment depends on:

- Whichthird-partyproviderisusedforrecruitment.
- WhichinternalIBMsystemishostingaparticularquiz(e.g.,SkillsBuildvs.a certification exam).
- ThespecificinterfaceofadevelopertoollikeAPIConnect,whichisforenterprise use.



Challenges&Solutions:

Challenges

1. **Timeconstraintsandtestpressure**

- **Challenge:**Theonlineassessments,especiallycodingrounds,aretimedand rigorous.
- **Specifics:**Candidatesoftenhavelimitedtime,suchas45-90minutesforcoding questions, which can make it difficult to complete problems under pressure.

2. **Platformfamiliarityandtechnicalissues**

- **Challenge:**ThetestsareoftenhostedonexternalplatformslikeHackerRank,and a lack of familiarity can be a hurdle.
- **Specifics:**Technicalproblemslikeapoorinternetconnection,platformglitches, or browser compatibility issues can disrupt the test.

Varyingquestiontypesanddifficulty

- **Challenge:**Thequizcoversmultipledomains,includingtechnical,aptitude,and cognitive tests, with varying levels of difficulty.
- **Specifics:** Questions can range from basic syntax and data structures to complexalgorithms,andmayalsoincludedebuggingorreal-worldscenario problems.

Solutionsandimportantpointsforpreparation

1. **Mastertimemanagement**

- **Simulatetestconditions:**Practiceundertimedconditionsusingonlineplatforms to improve speed and accuracy.
- **Prioritizetasks:**Duringthetest,quicklyscanallquestionstogaugetheir difficulty, and tackle the easier ones first to build momentum.

2. **Practiceonrelevantplatforms**

- **UseHackerRank:**TheIBMcodingassessmentisfrequentlyhostedon HackerRank, so practicing on this platform is highly beneficial.
- **Testyoursetup:**Beforethetest,ensureyourinternet,webcam,andmicrophone (for proctored tests) are working properly to avoid technical disruptions.

GitHubREADME&SetupGuide:

README: Key points

Awell-structuredREADMEonGitHubshouldgiveaclearoverviewoftheprojectandits features.

Projectoverviewand purpose

- **Whatitis:**Aclearandconcisedescriptionoftheapplication.Forexample:"Afull- stack,multi-useronlinequizapplication builtfortechnicalassessmentsand educational purposes".
- **Key features:**
    - **Userroles:**Differentaccesslevelsforadministrators,examiners,and candidates.
    - **Admindashboard:**Aninterfaceformanagingusers,creatingandediting quizzes, adding/deleting questions, and viewing results.
    - **Userinterface:**Aresponsive,interactiveinterfacefortakingquizzes.

Technologiesused

Aclearlistofthetechstackprovidestransparencyforpotentialcontributors.Common technologies include:

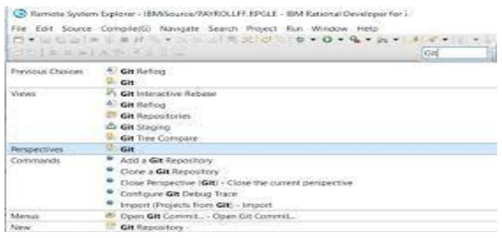
- **Frontend:**HTML,CSS(withaframeworklikeBootstrap),andJavaScript(often with a framework like React or Vue.js).
- **Backend:**Aserver-sidelanguagelikeNode.js(withExpress.js)orPython(with Django or Flask).

Setupguide:Keypoints

Thesetupguide(oftenpartoftheREADME)shouldbeastep-by-steptutorialforgetting the application running locally.

Prerequisites

- **Softwaredependencies:**Explicitlystatetherequiredversionsoftoolslike Node.js, Python, or the database system.

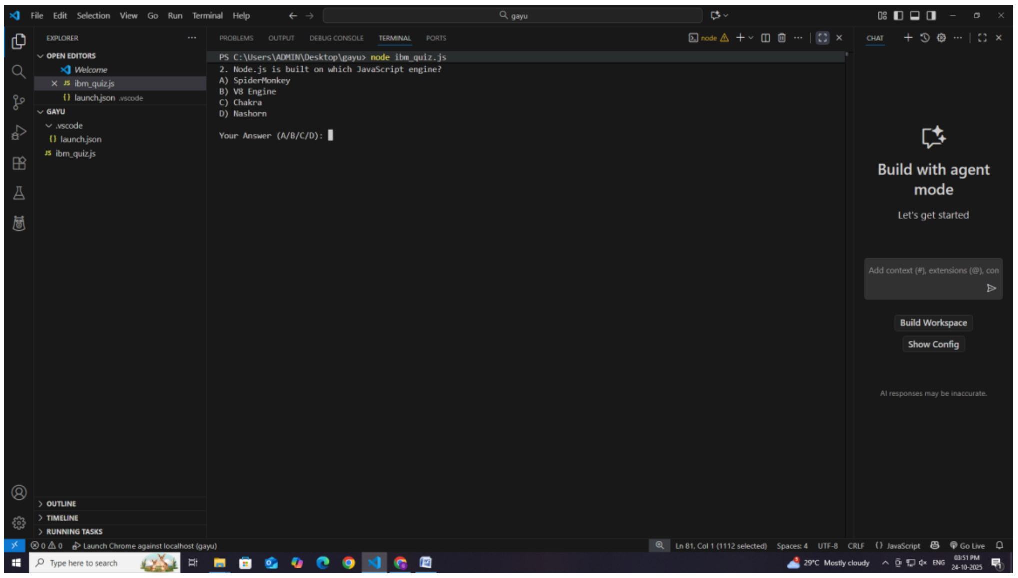

Remote System Explorer - IBMSource/PAYROLLFF.RPGLE - IBM Rational Developer for i
File Edit Source Compile(S) Navigate Search Project Run Window Help
Git
Previous Choices
Git Reflog
Git
Views
Git Interactive Rebase
Git Reflog
Git Repositories
Git Staging
Git Tree Compare
Perspectives
Git
Commands
Add a Git Repository
Clone a Git Repository
Close Perspective (Git) - Close the current perspective
Configure Git Debug Trace
Import (Projects from Git) - Import
Menus
Open Git Commit... - Open Git Commit...
New
Git Repository -

```
// IBM Online Quiz Application
// Language: Node.js

const readline = require('readline');

// Create interface for input/output
const rl = readline.createInterface({
  input: process.stdin,
  output: process.stdout
});

// Quiz Questions
const quiz = [
  {
    question: "1. What does IBM stand for?",
    options: ["A) International Business Machines", "B) Indian Banking Management", "C) Internet
Based Model", "D) Information Binary Machine"],
    answer: "A"
  },
  {
    question: "2. Node.js is built on which JavaScript engine?",
    options: ["A) SpiderMonkey", "B) V8 Engine", "C) Chakra", "D) Nashorn"],
    answer: "B"
  },
  {
    question: "3. Which command initializes a new Node.js project?",
    options: ["A) node start", "B) npm init", "C) node install", "D) npm create"],
    answer: "B"
  },
  {
    question: "4. Which company developed Node.js?",
    options: ["A) Microsoft", "B) Joyent", "C) IBM", "D) Google"],
    answer: "B"
  },
  {
    question: "5. Which module is used to create a web server in Node.js?",
    options: ["A) http", "B) fs", "C) url", "D) os"],
    answer: "A"
  }
];
```

```
let score = 0;
let currentQuestion = 0;

console.log("□ Welcome to the IBM Online Quiz Application!");
console.log("==============================================\n");

function askQuestion() {
  const q = quiz[currentQuestion];
  console.log(q.question);
  q.options.forEach(opt => console.log(opt));

  rl.question("\nYour Answer (A/B/C/D): ", (userAns) => {
    if (userAns.trim().toUpperCase() === q.answer) {
      console.log("✅Correct!\n");
      score++;
    } else {
      console.log(`❌Wrong! The correct answer was ${q.answer}.\n`);
    }

    currentQuestion++;
    if (currentQuestion < quiz.length) {
      askQuestion();
    } else {
      console.log("□ Quiz Completed!");
      console.log(`Your Final Score: ${score}/${quiz.length}`);

      if (score === quiz.length) {
        console.log("□ Excellent! You are an IBM Quiz Master!");
      } else if (score >= 3) {
        console.log("□ Good job! Keep improving!");
      } else {
        console.log("□ You need more practice. Try again!");
      }

      rl.close();
    }
  });
}

askQuestion();
```

```
// Use IntelliSense to learn about possible attributes.
    // Hover to view descriptions of existing attributes.
    // For more information, visit: https://go.microsoft.com/fwlink/?linkid=830387
    "version": "0.2.0",
    "configurations": [
        {
            "type": "chrome",
            "request": "launch",
            "name": "Launch Chrome against localhost",
            "url": "http://localhost:8080",
            "webRoot": "${workspaceFolder}"
        }
    ]
}
```

Output:


File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS
Welcome
ibm_quiz.js
launch.json .vscode
GAYU
.vscode
launch.json
ibm_quiz.js
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
CHAT
Build with agent mode
Let's get started
Build Workspace
Show Config
AI responses may be inaccurate.
OUTLINE
TIMELINE
RUNNING TASKS
Launch Chrome against localhost (gayu)
Ln 81, Col 1 (1112 selected) Spaces: 4 UTF-8 CRLF JavaScript Go Live

```
PS C:\Users\ADMIN\Desktop\gayu> node ibm_quiz.js
2. Node.js is built on which JavaScript engine?
A) SpiderMonkey
B) V8 Engine
C) Chakra
D) Nashorn

Your Answer (A/B/C/D):
```