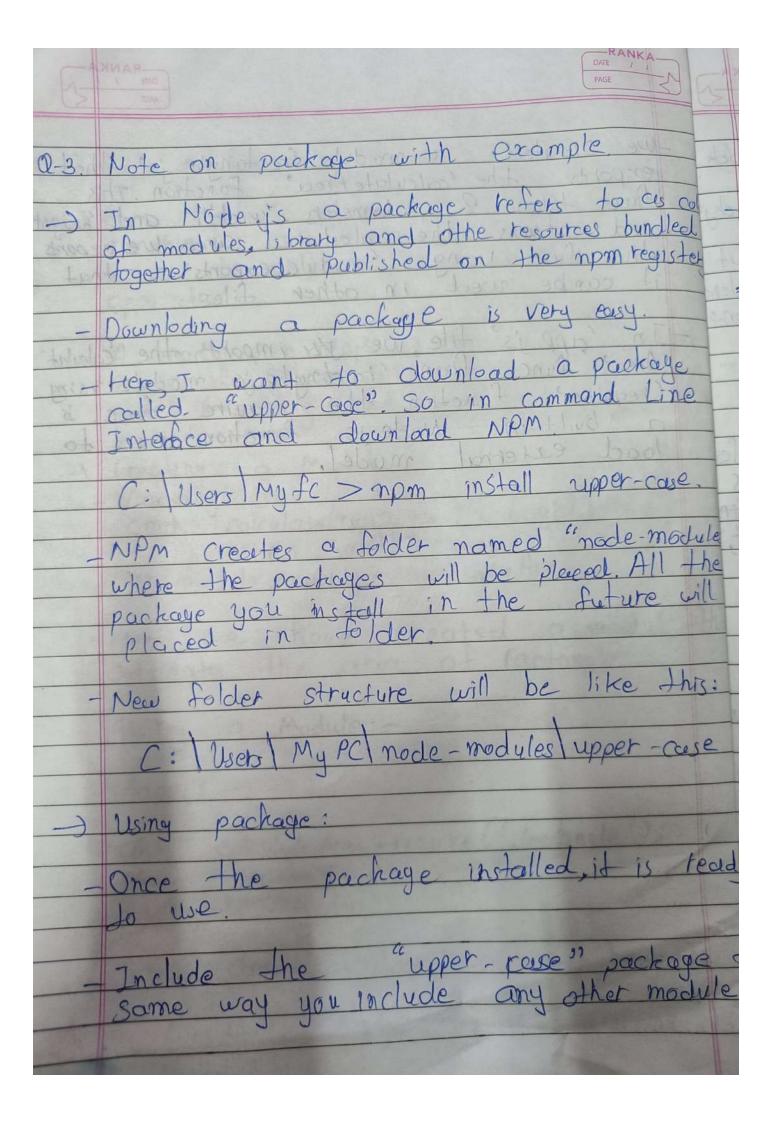
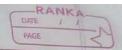


| 0-2 | Note on the modules with example. |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------|
| -) | In Node Js, modules are used to encapsul resusable pieces of code macking it but are easier to organize and maintain large applications. |
| | A module in Node Is is a self-contained piece of code that organized, promoting code reusablety and reducing namspace collis |
| DAI | Creating a Module. //rectangle is const calculateArea = (width, height) => { teturn width * height; y; module exports = calculateArea; |
| _ | Here we have created a module the calculates the area of ractingle. |
| -) | Using a Module:- |
| _ | Napp.js: |
| | const vidth=5: const height=10; |
| | const area = colculate Area (width, height); |
| | Console log C" The atea is \$ (area}"); |
| | |

we created a module 'rectangle is' that exports the 'calculate Area' Function. This func. takes 2 parameters. 'width' and height' and returns the calculated area. We exports the func using 'module exports' so that it can be used in other files. In 'app. is' file, we Its import the Calculate Area' func. From 'ractingle is module using 'require' function the require func. is a built-in Node is function used to load external model. Uses I My FC > many install more rout Creater a folder named imade man the packages will be placed All or with formall the the you go Their My PC mode - modules Jupper -





| 1/2 | PAGE A |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | |
| 2/30 | Var uc = require ["upper-case")3 |
| | |
| 100 | Create Node to file that will convert "Hellow world" into upper-case letter. |
| | world into upper-case letter. |
| DE N | Link by a reserve of his and the desired |
| = | Var http = require('http); |
| CIVO | http Create Server (function (reg, res) tes write Head (200, & Content-type itext-htm |
| | to a 1 1 la Heard (200 5 "Contact tu se" lartit |
| | |
| | res write Cuc. upper Case ("Hello world!"); |
| 01 | tes end () |
| 200 | res end (); y). listen (8000); |
| 76.0 | The second secon |
| 401 | The output will be more |
| | 19 Mon 10 10 19 19 19 19 19 19 19 19 19 19 19 19 19 |
| | Hello sworld! |
| | The Bellet I be reported to the second |
| 100 | 11 rependency Management: |
| 13 | Ochen lands to know the land to the land t |
| 10.30 | - The Coendencies and Bellepanden |
| 1 | Lections of Dackage a steeliked the |
| 4 | did in the lample Mital-Incommendation |
| | to order of the descendance of the south of |
| do | Total Supplied Supplied Supplied |
| (05) | Markett - Annensation Company |
| Ma | Sont file de deut lead the for |
| 1/8 | that book to boll took |
| Print, | Lond dominated 900 |
| | 1 serge of the population |
| CHUI | |

Q-4. Use of package ison and package-lock Both package son' and package lock are essential files in modes project they serve different progress purposes but work together to manage project dependent and ensure consistent package installation across different environments. - package ison: the package ison' file is the manife file for a Node is project. It contains metadata about the project including its name, version, description, entry point, scripts, dependencies and more 1) Dependency Management: he 'dependencies' and dev Dependencies section in packages required for the project to roun and for project to run and for development purpose.

When the someone clong yourk project
to new environment they can run inpm
instell' and npm will read the pack
I son? file to download and install
all the speech power load and install
required dependencies.

2) Scripts:-You can define custom scripts in section of package ison' these scripts can be executed using inpm tun cscript-names?

Common scripts include "stert" to run the en application and "test" to excepte unit test 125 Meta clada; The 'package i son' fine contain essential info about the proj, such as author's name proj description, license, Repository URL & more fer 2 pachage-lock json ..-The 'packag-lock ison' file is automatically generated by npm when dependencies are installed or updated. i) Dependency Lacking:

The purhage - lock Ison' file locks the
installed puchage Versions including all their transitive dependencies this ensures that everyone working on the project uses the exact same version mistches between development 2 production environment o of WORKING

| 1 | PAGE |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| - 0 - | |
| <u>u-5</u> | Nodejs package: |
| | |
| | In the Node is ecosystem packages are collection of modules, libraties and resources. |
| Samuel + Cal | that developers can use to enrance , |
| | applications which shall shall shall be satisfied to |
| | -Node's packager provide functionality |
| _ | various purposes ranging from web development and server-side tasks to |
| | development and server-side tasks to |
| SALVE | command- ine utilities and more |
| | Web fram works: - |
| - | package like expressis, koa and Hop |
| | popular webi frameworks that simplif |
| 1860 EER | The process of building web application API's by providind routing middle |
| | Support and other features. |
| | Monagement - Haller - |
| - | package like locash, Ramdo, and Und |
| 410 | package like Todash, and and and Ind |
| | with tasks like data manipulation, |
| 25 1 | Validation and functional programming- |
| Hyee) | - The poored same version and - |
| | Database libraries: la chage like Mongose and sequelize |
| | ((-,) |
| AND DESCRIPTION OF THE PARTY OF | vorking with databases and orm. |
| The state of the s | cerpa bility. |
| | Mar of the second secon |

| | 105 | PAGE 3 |
|------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | | |
| 1 | | Authentication and security. |
| | | Packages like Passport is and decrypt. Offer solutions for authentication and |
| | 10 | posspord hashing to enhance application |
| # | | security. |
| | | - Fle System CHIHRS I |
| 4 | 7 | Template Engines: |
| 0 | 02 | Pakages like EJS, Hindlehors, and Pag |
| | - 0 | enable developers to generate dynamic |
| 0 | | HIMI content easily. |
| 0 | A | HTTP & Clients amon dil mobile |
| | 1 | Packages like Axios and Request provide |
| Pi | - | tools for making till requests, all nos |
| ify | | Node is application to itract with MII |
| 1/19 | | and web services. |
| all | | Testing Frameworks: |
| | -) | and Chai of |
| 100 | | Institute and assertion for |
| 1 | 10.5 | testing utilities and assertion for oreating and running test suite |
| 1 | | |
| 1 | 7 | CLT:- Commond-Line-Interface) Tools: |
| 01 | - | Pachages like Commander and gorge |
| 7 | K | enable developers to build like dools |
| | | CLJ:- (command-Line-Interface) ws. Pachages like Commander and yorge enable developers to build interactive and user-friendly command-line tools |
| | 200 | The Spatian set |
| | 100 | |
| 9 | 2 GB | 010 |
| 1 | 120 | PI |

| -9 | Real time Communication: - facilities 1-6 |
|-------|------------------------------------------------------------|
| | Prochagos like Socket 10 |
| | time communication between circuits on |
| nost | servers using Web Shockets |
| | |
| - | File System Utilities:- Package like fs-eatra and glob pre |
| - | additional functionality and ease of |
| | lan worling with the file system |
| | for working with the file system. |
| - | Date & Lime manipultion |
| _ | Pachages like Moment is and Devis |
| ete | offers tooks for porsing, formatting o |
| Linis | manipulating dotes & times. |
| | the toute of application to the left with |
| | the cost of the course of the first |
| | THIS A THE Provided to the little |
| | - Testing transports and and |
| 4 Day | - Mackage like Morty Jest and CHai |
| | de noitige pombar sitille parter |
| | - chealing and forming and dest suffere |
| | 1 - C A A A - A A L L A A A A TO A |
| | 19 (1) on Commander Therefore) Task: |
| | |
| 311 | Lington blind of maderals allowed |
| | - and merchiendly command histories |
| | |
| | |
| | |
| | |

NPM introduction & command with it's use. nom is the chefacult package manager for Node is and it is one of the largest software Registeries in the world. It allows developers to easily install, manage, and Sen distribute Noglejs pachages to be used in.
their projects, npm comes bundled with
node is so when you modell Node is
npm is automatically instelled on your Pho system a lalla 00 -) npm init: - This command initializes are new Mode's project and creates a package joon file.

It prompts you to enter details about
the proj such as name, version, description,
author and entry point. 9 npm install: ¿pachage mames

- Install a specific puchage and adds it

to the 'dependencies' section in

pachage json. nom uninstell & Pachage name >
Removes a Pachage from the proj.

and updates the package join Like accordingly.

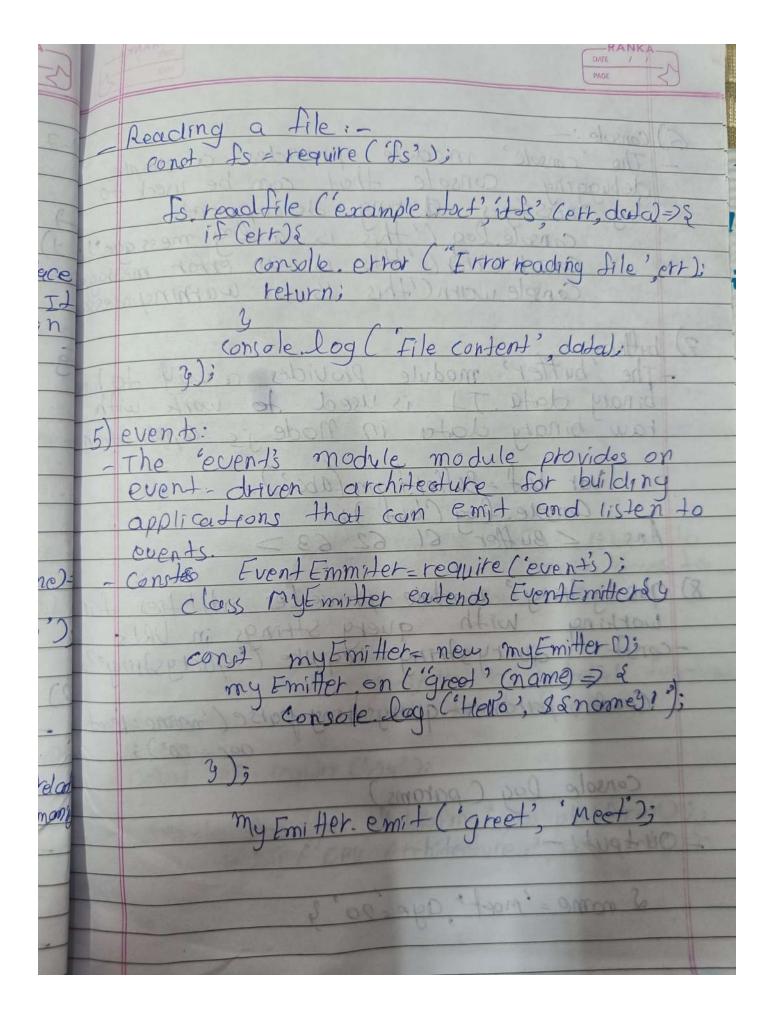
Inpm - update:
- Updates all the packages listed in package ison to their latest version based on the specified version tanges software Registeries ist the nom search package name -serches the nom registery for packages with the given name. July nedu I npm 1/50: - ball along a plantograture a man all the installed peckeyes in cuttent project. -) npmonthito -yailoitini brummos - Initialized a new project values, shipping the prompts it creates a package ison? file with defau settings. the and eathy point) npm publish: publishes a package registary making it Epachage names Removes a Package from the addrago ison accordingly

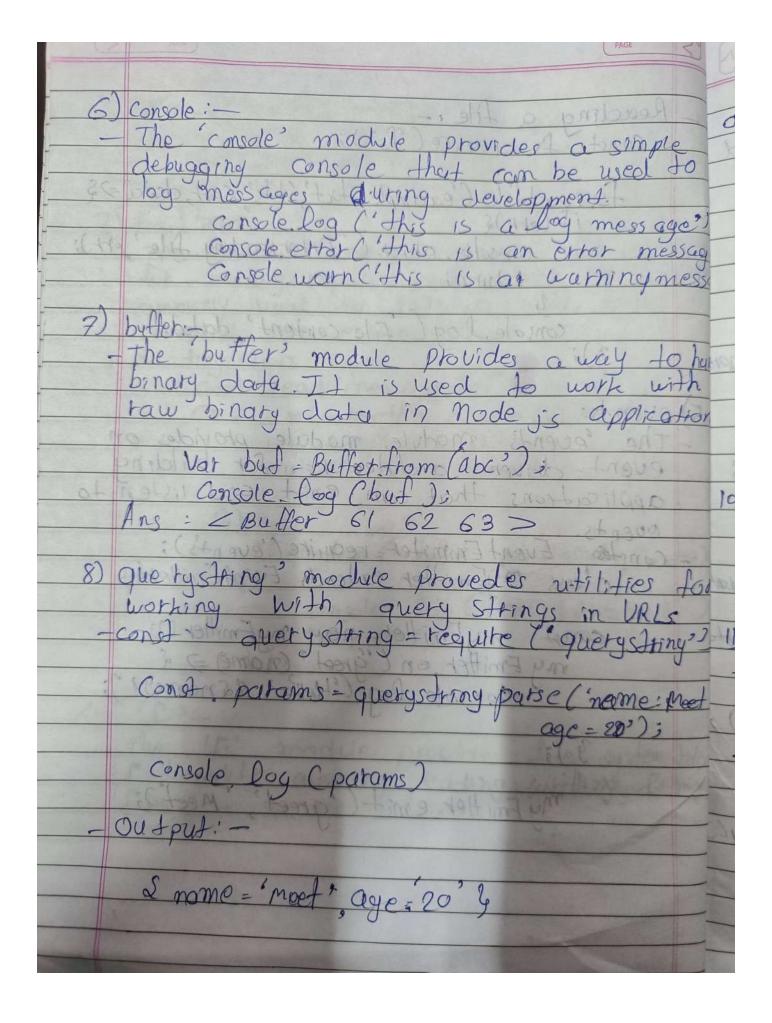
2-7. Describe use and working of following Node's packages. Important properties and methods and relevant programs. The 'url' module provides utilities for UR resolution and parsing. It is used to work with URLs & extract into from them Patsing a URL const & URL 3= requires ("url"); Const string= "https://www.demo.com:8000 forth?

Query = hellow

Const passed VRL= new URL (whisting); Console by (parsed URI hast); Console log Coursed URL search Params get (query); 2) process pm2 (external package);
- process object provides info & control over the Node is process. It allows intracting with the current process and accessing environmenment variable.
- Gretting Command-line Amguments the console log (process argu); "pm2" is an external package used to momcope Node is processes. It provides tools for process maniforing, scaling and chuster. management.

| (2) | PAGE 2A |
|-----------|-----------------------------------------------------------------------------------|
| | |
| N observe | # Install pm2 alphally |
| 210 | # Install pm2 globally mpm install agripm2 |
| | pm2 steert app is |
| | |
| 3) | read line: |
| - I MU | The 'readline' module provides an interfere |
| 74.7 | for reading input streams link by line is commonly used to intracte with users in |
| | command line environment. |
| | Reading I water Inout |
| | const read line = require (readline) |
| | const wil = readline, create interfacely 5 |
| 9 | input: process stolini |
| | would unpoutput : process, stdout; |
| | Cont. passed URL = new - URL (HISHMA): |
| | Median (what's your name? (name). |
| | 12 question (Prights your reamer, (name) |
| -1(-50- | console log (Hello, & & name 4!) |
| | rel. close (): |
| | D process and Certernal processed |
| artha | t. proces object, plandes ento l'amtalia |
| 40 | for the awall T many placed |
| frances | The 'fs' module provides file system-rea |
| | fue tionality, allowing leading, writting & mont |
| - | JIB. |
| | (cubro 5522001) bod chouse |
| | - Com? - s on endered a de il |
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res while the act (200, & content Types; te Server luten (3000, () =) & console log (server is running on 18° module exposes APTS rebited 18 js engine provinding access unce 2 memory related state. for perforance 'os module provides os telatel sinfo about the host os. coast os = tequire ('as'); Cosole log l'os Platformi, as photormi console log l'app Architecture, os archi

The 'http' module provides a set of functions and classes to create HTTP servers & make HTTP requests const http = require(http); Const server= http. crecoteserver(creq, res)= res while Head (200, & "Content-Type": 'teat/pat's tes. end("Hello North!"); Server. luten (3000, () =) & Console log ((server is tunning on port 300
3); The 'V8' module exposes APTS tebeled to
the V8 is engine, provinding access to
performance & memory-related date. sib in 21 Dicompressed Outa, Cert, decompreso (The 'os module provides os related functions such as info about the hast os.

Const os = toquite ('as'); Cosole log (°os Platform,°, os platformo); console log (°cpv Architecture:°, os arch());

