

WEEK1

1. Discuss success and failure stories

	SUCCESSFUL	CHALLENGED	FAILED
Large	8%	26%	41%
Medium	9%	26%	31%
Moderate	21%	32%	17%
Small	62%	16%	11%

2. Presentation of collected case studies

a) The Ariane 5 Disaster

3. Ariane5.OnJune4th,1996,theweveryfirstAriane5rocketigniteditsenginesandbeganspeeding away fromthecoast ofFrenchGuiana.
4. Whatwentwrong?Thefaultwas quickly identified as a software bug intherocket'sInertialReferenceSystem....
5. Notenoughspaceto reachspace.

The Ariane 5 Disaster

Software failure



- ❖ Software failure occurred when an attempt to convert a 64-bit floating point number to a signed 16-bit integer caused the number to overflow.
- ❖ There was no exception handler associated with the conversion so the system exception management facilities were invoked. These shut down the software.
- ❖ The backup software was a copy and behaved in exactly the same way.

b) The Patriot Missile Failure

The Patriot Missile Failure

The Patriot Failing

- Feb 1991 – Gulf War
- Failed to intercept Scud missile from Iraq
- 28 dead
- 100 injured
- Error from storing value in fixed point register

The Patriot in action



The Patriot Missile Failure

The Patriot Missile Failure 2

School of **informatics**

The Patriot Missile Failure

- **Fault** - Inaccurate calculation of the time since boot due to computer arithmetic errors.
- **Error** - The small chopping error, when multiplied by the large number giving the time in tenths of a second, lead to a significant error of 0.34 seconds.
- **Failure** - A Scud travels at about 1,676 meters per second, and so travels more than 500 meters in this time. This was far enough that the incoming Scud was outside the range gate that the Patriot tracked.

Massimo Felici

On Software Engineering

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c) Mars path finder

- On September 23, 1999, NASA lost the \$125 million Mars orbiter spacecraft because one engineering team used metric units while another used English units leading to a navigation fiasco, causing it to burn in the atmosphere.

Mars pathfinder

- Design flaws or inaccurate modeling Mars pathfinder mission landed flawlessly on the Martian surface on July 4. However, later its communication failed due to a design flaw in the real-time embedded software kernel VxWorks.
- The problem was later diagnosed to be caused due to priority inversion, when a medium priority task could preempt a high priority one.

d).FBI Virtual Case File (or VCF)

- VirtualCaseFile (or VCF) was a [software](#) application developed by the [United States Federal Bureau of Investigation \(FBI\)](#) between 2000 and 2005.
- The project was officially abandoned in April 2005, while still in development stage and cost the federal government nearly \$170 million.

- In 2006, the [Washington Post](#) wrote "In a 318-page report, completed in January 2005 and obtained by The Post under the Freedom of Information Act, [the [Aerospace Corporation](#)] said the [SAIC](#) software was incomplete, inadequate and poorly designed so that it would be essentially unusable under real-world conditions."
- Even in rudimentary tests, the system did not comply with basic requirements, the report said.
- It did not include network-management or archiving systems—a failing that would put crucial law enforcement and national security data at risk"

3. Importance of ethical practices:

- code of ethics specifies various rules and regulations of conduct that the members of the team must adhere to.
- It sets forth the values, principles, and standards that guide the testers to perform their tasks appropriately and helps them use the information they have in an ethical and appropriate manner.
- Code of ethics, in short defines the acceptance of responsibility by the software testers, while keeping the best interest of their clients as priority.
- **Types of Code of Ethics in Testing:**
- While performing software testing, testers should commit themselves in making analysis, finding defects, monitoring the process of testing, reporting defects & bugs, maintaining the software, among other things in a respected and beneficial manner.
- Moreover, they should consider the safety and welfare of the public and the client as well as should adhere to the following code of ethics to ensure the works credibility. The various code of ethics are:
- **Public:** During the process of software development and testing, the public interest and benefit should be considered before corporate and personal gain. They should consistently act in the interest of the public.
- **Client & Employer:** Apart from public interest, the testers should consider the interest of their client and employer while conducting tests on the software. They should act according to the requirements of their clients and should fulfill all their needs.
- **Product:** The most important factor that needs consideration during the process of software testing is the product itself.
- The testers should perform their tasks while ensuring that the deliverable is of best quality and has exceptional effectiveness. Also, make sure that all deliverables on the product are in compliance with the stated standards.
- **Judgement:**
The testers should maintain integrity and independence while making judgments regarding the process of testing or any other aspects related to it.
- **Profession:** The team of testers should follow the set values, principles, and standards and maintain the integrity of their profession.

- **Management:** Here, the team managers and leads should take the responsibility and ethical steps to manage the process of software testing, development, and maintenance. This will help them avoid any confusion as well as allow them to test each component of the software accurately.

Why is Code of Ethics Important?

- It protects the interests of consumers and offers them assurance that they are not being misguided or misled by false promises and advertisements.
- Helps firms and organizations in obeying the law and treating people honestly and fairly.
- Clarifies organization's missions, values, and principles.
- Promotes employment ethics, such as security, promotions, health and safe working conditions, etc.
- Allows one to create a professional environment where unethical behavior is a norm.
- Serves as a guide or reminder of how to perform tasks as well as the way one should act in a particular situation.
- Can indicate that individuals are seriously concerned about responsible and professional conduct.
- It is a central guide and reference for employers.
- Prevents unjust treatment.
- Brings out best in people as well as high standards in organizations.

3. Enact the importance of ethical practices

Ethics provide the moral compass by which we live our lives and make decisions—'doing the right thing' because it's the right thing to do.

The way we make decisions is important for organization's because the wrong decisions can have a significant impact on people's lives and the reputation of organizations. So, when we make decisions based on good principles, and live by good values, we can improve the lives of others and the experiences they have at work.

Ethical practice standards

Each standard progresses through four levels of impact:

(1) Foundation level

At this level you will:

- Take responsibility for your actions
- Act consistently with relevant regulation and law
- Handle personal data and information in a professional manner
- Demonstrate honesty in dealings with others

(2) Associatelevel

Atthislevelyouwill:

- Makeresponsiblechoicesaboutyourwork,applyingprofessionalprinciplesand values
- Considerthepurposeandimplicationsofactions,decisionsandpeoplepracticesf orallstakeholders
- Provideexplanationsandreasonsforthechoicesyoumakeandtheadviceyouprov ide
- Demonstrateprofessionalismandconsistencyinwhatyousayanddoinordertobu ildtrust

(3) CharteredMemberlevel

Atthislevelyouwill:

- Makeresponsibledecisionsbyconsideringdifferentethicalperspectives,andfin dingthebest possiblewayforwardforallstakeholders
- Coachandinfluencemanagersandleaderstoconsidertheimplicationsoftheirdec isionsonstakeholders
- Challengedecisionsandactionswhicharenotethical,explainingtheorganizatio nrisks
- Encouragetransparencyindecision-makingandcommunicationwherpossible

(4) CharteredFellowlevel

Atthislevelyouwill:

- Makeresponsibledecisionsbybalancingdifferentethicalperspectives,andshap ethowethicsinformwiderdecision-makingandgovernance
- Coachandinfluenceseniorleaderstoconsidertheethicalimpactoftheirdecisions intheshortandlong-term
- Takeavisibleleadinsolvingethicaldilemmas,consideringhowtheywillplayout beyondtheorganization
- Surfacetheunsaidinleadershipdiscussions toenabletransparencyandimproved decision-making

2. Game to understand the agile process: Morning wakes up game

"WAKEUP IN THE MORNING" GAME A QUICK



FUN WAY TO UNDSTAND THE BASIC CONCEPT
OFITERATIVEINCREMENTALDEVLOPM
UNDERSTANDTHEBASICCONCEPTOFIGERATIVEINCREMENTALDEVELOPMENT

"Wake up in the morning" Game – A quick fun way to understand the basic conceptofiterativeIncremental Development

A fundamental aspect of Agility is incremental and iterative development. It's so basic that when introducing Agile you usually mention this idea in the first 5 minutes. The core understanding that moving to small batches significantly improves speed, quality and risk management, helps you move from an all or nothing approach to a world of options.

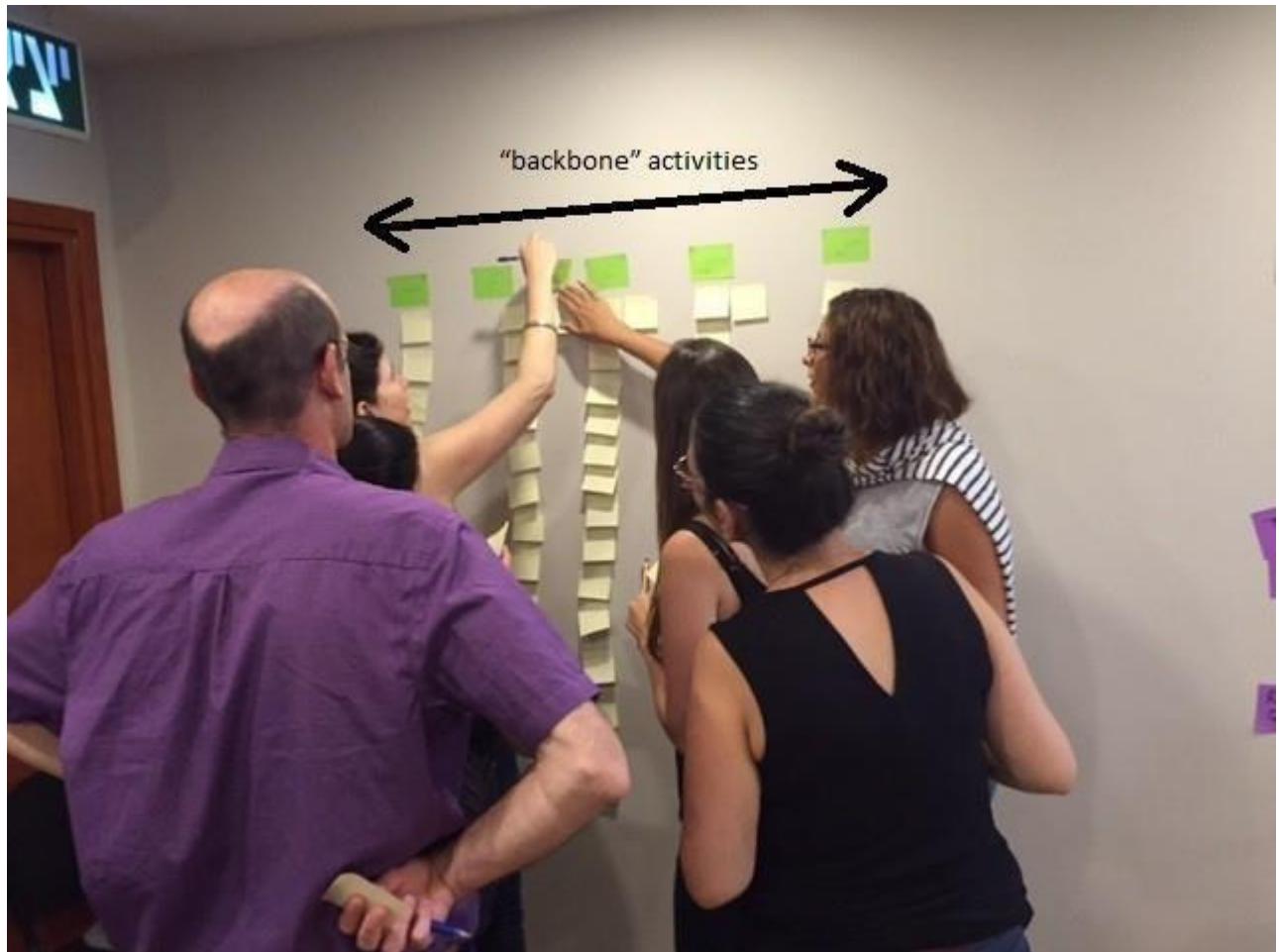
Step 1 – Individually list the morning activities (5 minutes): I ask people to write on sticky notes the activities they did from the moment they woke up until they reached the office, as many as they can.

It should be one activity in each sticky note and should be done individually (unless people woke up together that morning...)

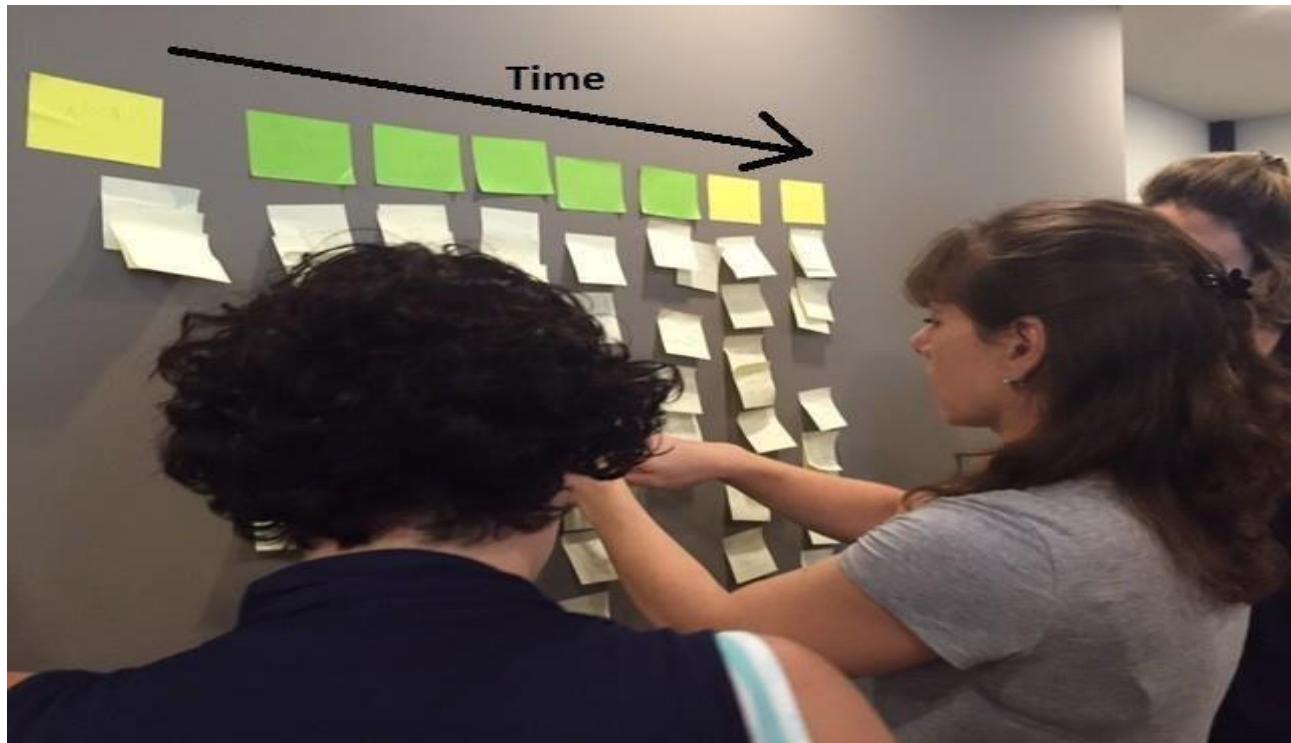
**Step2–Collaborativelygroupingtheactivities(5minutes):**

I choose a space in the room with enough place on the wall. In teams of up to 7 people I ask people to take their notes and group them together under common topic that will be their title. It's a group of activities with a common goal, for example, washing and refreshing can include activities such as brushing the teeth, taking a shower, going to the toilets, etc.

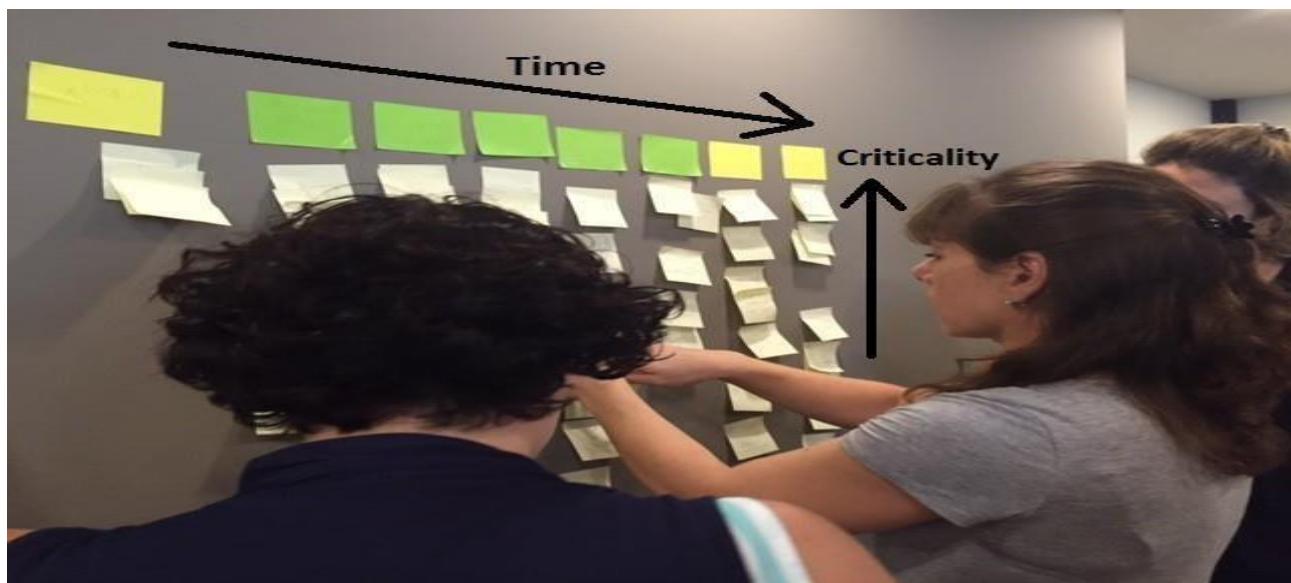
Each team should place their sticky notes on the wall and organize them in the groups with the topics as their title. The titles are the "backbone" activities.

**Step3–Orderthegroupofactivitiesbytime(3minutes):**

I ask the teams to order the activities from left to right sequentially, in a way that the order makes sense as a story with a beginning, a middle and an end (for example:wake-up,washing,breakfast,homearrangements,kids,travel,reachtheoffice..).

**Step4– Ordertheactivitiesbycriticality(5minutes):**

Now I ask the teams to prioritize the activities in each group by criticality ordered from top to bottom, so that important activities are on top.



Briefing on this step:

Prioritizing is difficult when there are no guidelines, such as a certain goal we wish to achieve with our product or a certain market segment or specific persona. For example, if our target customers are single men under 25 with no kids, or married women with 3 kids over 30—the priorities will probably be different, different activities will be

considered critical for each target customer. Define the goal/persona so it is easier to determine the priorities.

Step5–Drama!(5minutes):

And now for the drama..! tell the group:

Imagine you had a very important meeting in the morning that you just cannot miss or be late to. Unfortunately, the alarm clock didn't do its job and you woke up late and have only 15 minutes to get out of the house!

What do you do? Which part of the morning routine will you drop to fit in the minimum time you have?



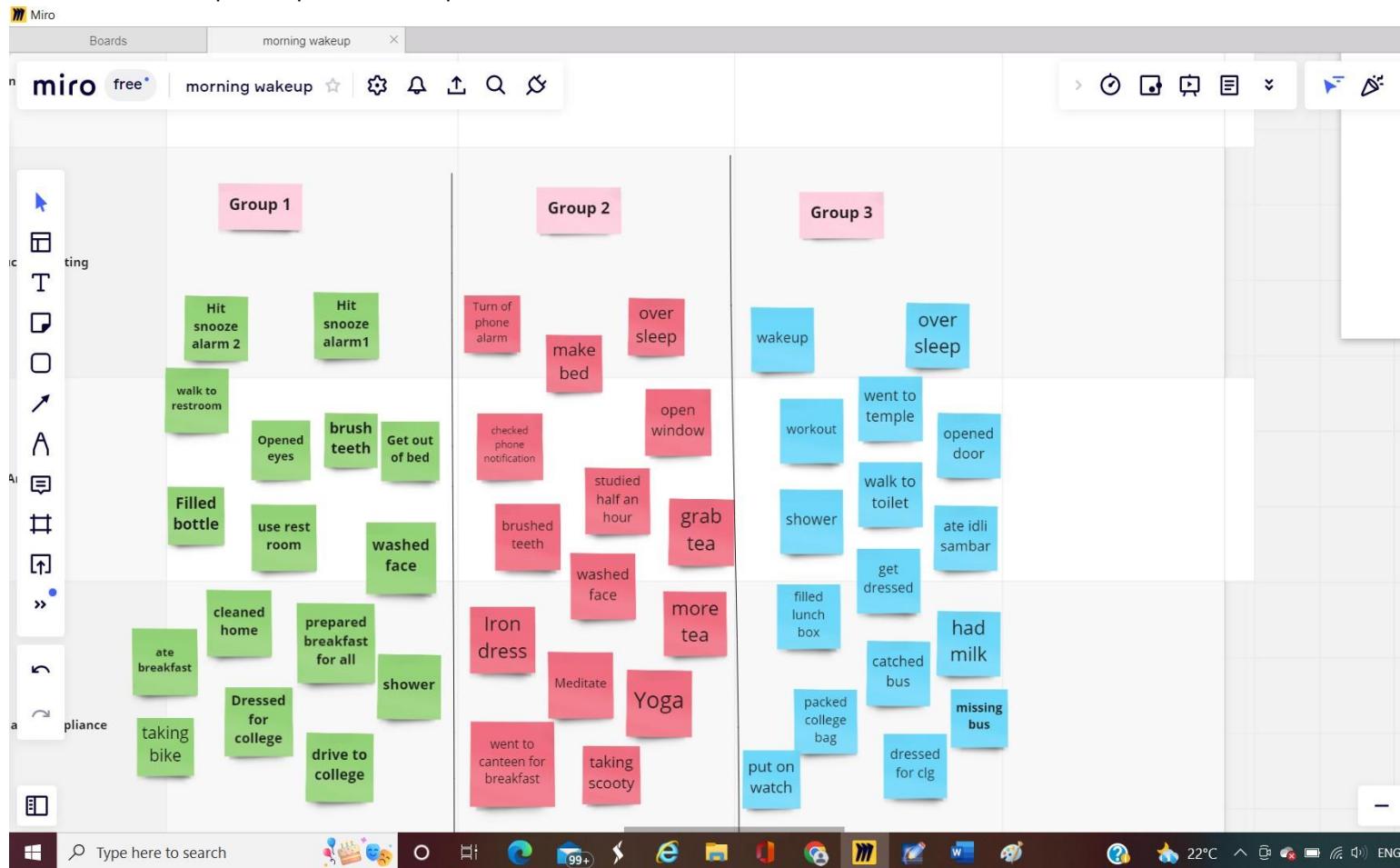
Now I ask the team to draw a horizontal line through the activities so that all the activities they choose to do in such a morning are above the line and all the rest under the line.

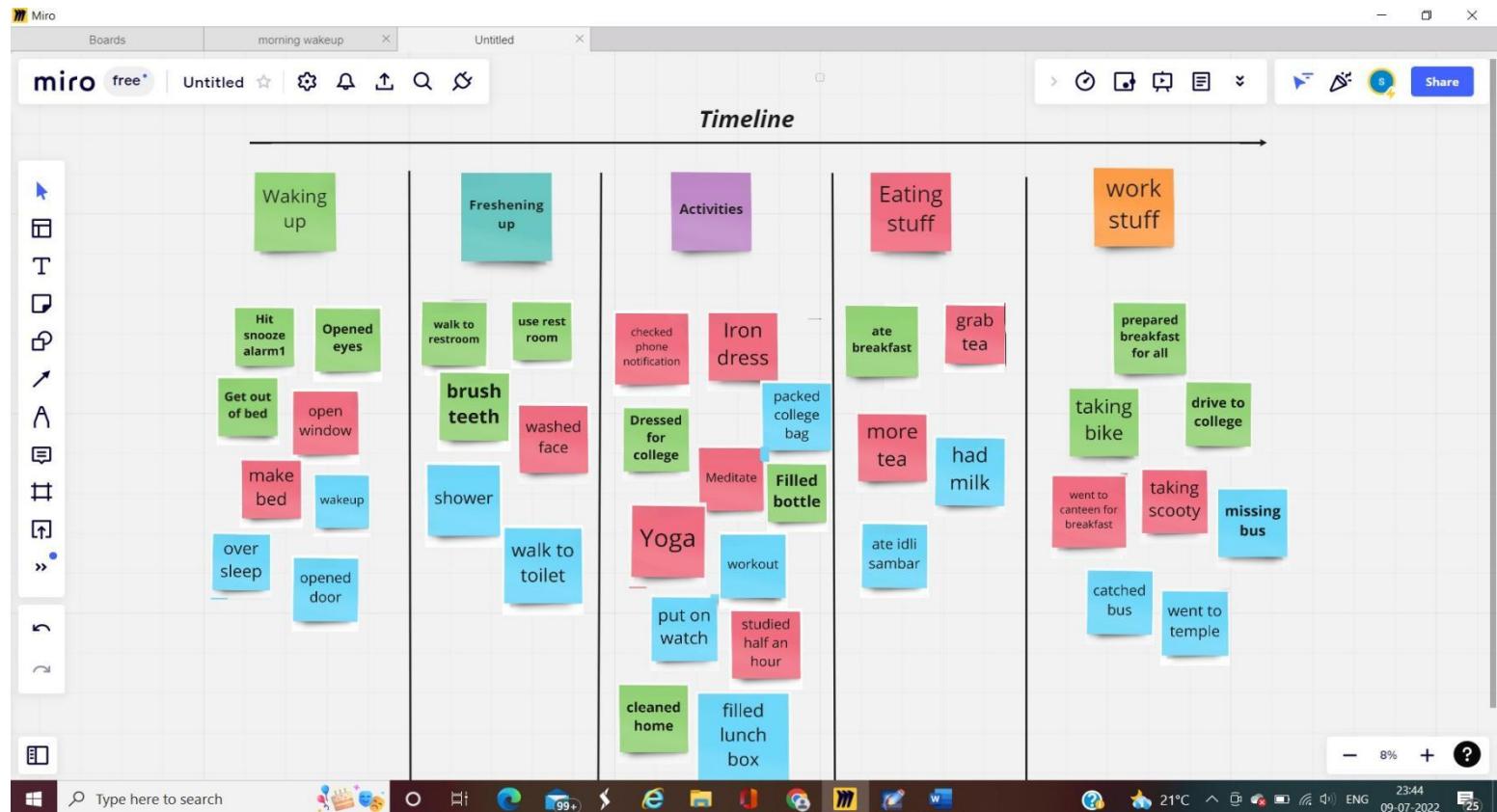
They need to reach the office safely and be on-time with the minimum activities as possible.

**Final Briefing:**

The exercise demonstrates the following important concepts:

- With the constraint of time our aim is still to realize the full “value” of getting on time to the office. In the process of minimizing the activities, we removed many of them in each step and left the process very thin and lean but still end-to-end.
- Since we have a constraint of time, as we eventually want to be fast which means minimize the time to reach value. In many cases we will go to deep in a single step and not realize the full end-to-end value. In this exercise we demonstrate how it should be done across the map and how in every increment we build what we have the full end-to-end.
- We don't invest equally in each step – in some steps we left only one activity and in some we left more, depending on the step. Some steps where even entirely removed.
- Choosing the depth of each step is easier when the full picture is available since the alternatives are visible.
- Focusing on a single activity but in the context of end-to-end value helps development teams better understand the scope of the requirement. For example, preparing breakfast in the context of getting out of the house in 15 minutes is totally different from preparing breakfast for the family on a vacation morning. Communicating effectively the context helps to make the scope more precise and to trim the less important parts of the scope.





2.1. Themarshmallow changes:

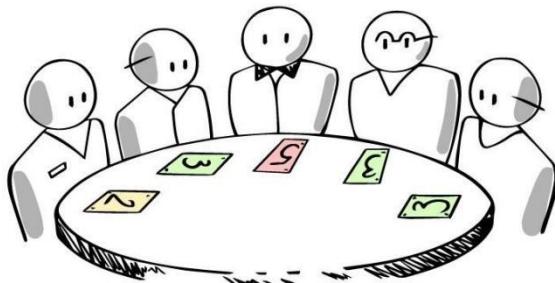


The challenge is simple:

In 18 minutes, build the tallest free-standing structure out of 20 sticks of spaghetti, 3 feet of tape, 3 feet of string, and one marshmallow. The marshmallow must be on top.



2.2. White Elephant Sizing—Agile Estimation Method



Agile teams need to estimate the size of their stories or product backlog items. The goal of the **White Elephant Game** is to get a quick estimate of the relative size of an agile project and the size of the individual stories before the project starts.

It gives opportunity to everyone for their voices are heard, and everyone contributes equally. Estimation is a key component of **project realization**.

It projects the **cost for Stakeholders, duration of the project for Product Owners, size or complexity for the developer**.

The white elephant game attempts to do this in a way that can be reliably fit into a given amount of time and keeps the focus on getting the overall estimation done rather than disagreements on the sizing of particular stories. There are significant differences between **White Elephant Sizing Game** and **Planning Poker**, so evaluate which one is better for your team.

- [**Planning Poker—Agile Estimation Method**](#)
- [**Bucket System—Agile Estimation Method**](#)
- [**Affinity Estimation—Agile Estimation Method**](#)
- [**Dot Voting—Agile Estimation Method**](#)
- [**White Elephant Sizing— Agile Estimation Method**](#)

White Elephant (Procedure)

- A board (whiteboard or White paper chart or something like that) – divided into 5 columns (XS, S, M, L, XL) or divide it into 3 (S, M, L) columns or start with three columns and as per the need for more granularity add additional columns or divided by Fibonacci sequence for estimation 1, 2, 3, 5, 8...
- Timer or stopwatch
- A set of prepared user stories – Print out/Write down all Product Backlog Items or user stories on separate cards. It can be just the summary or summary with brief description of user stories which is enough for the team to understand.
- A set of cards □ Tape or sticky note

White Elephant Rules

Team stand up in a semi circle facing their sizing or whiteboard.

Shuffle a deck of user story cards and put those with face down on a table just in front of the board.

Start the timer which is the signal for the first member to perform the following steps:

- Take a card from the top of the deck read it out and place in one of the columns (a.k.a **propose the estimation** for that item).

OR

- Take one of the cards already placed on the board and move to another column (a.k.a **change the estimate**). If someone is moving card, he/she need to provide some reasons for doing it.

OR

- Pass, if all the stories are replaced and they are satisfied with the story placement

The first person has only option to take the card from table and place it in the board as there are no other cards in the board. Once the action is done team member goes to the end of the queue and it is the next person turn. Repeat the above process for the other team members until there are no more cards to pick from, he/she can either take a new story or re-estimate that story.

Once all the stories are replaced on the board, the team inspects the board and each member can propose to move one of the stories' place. They can, later on, discuss it with the product owner and ask questions that will help them estimate those stories together.

2.3. The Easter-egg challenge

Step out of your comfort zone of technical discussions, data analysis and user storywriting, and step into the world of easter egg painting. Together with the Product Owners, Product managers and Technical team leads, we focussed today on something different, that in the end, influences everything we do and stand for.

A challenge, inspired by [this article](#), that on first sight looks fun and irrelevant, represents in many ways how teams operate, and how that is impacting their productivity. While painting eggs, cutting them out, checking the quality of the delivered product seems extremely easy, the reality shows that even supposedly easy tasks can become difficult and hectic when the participant's mindset is not right.

The challenge is simple:

Groups of 4 or 5 individuals per team

- A bunch of papers with unpainted Easter eggs on them
- Several boxes of crayons and some scissors
- Requirements from the business (preferably difficult to understand)

During the challenge the team will be instructed to deliver the painted eggs according to the pre-defined requirements, on time, on quality and on budget (let's just imagine there was a budget). The team will get 2 attempts in which 2 different delivery approaches will be used, where the first is based on Waterfall, and the second simulates a more Agile approach.

While the core learning of the challenge can be found in that an Agile mindset helps you improve productivity (spoiler alert!), the challenge also shows the participants other relevant daily work problems that, if not responded to well, can seriously impact your product delivery.

3,2,1,GO!

Step 1: Start planning your work, appoint who paints, who has the best scissor skills and who is responsible for Quality Assurance. The teams have 3 minutes to decide who does what. **(3 minute time)**

Simulating the first phase of development using a waterfall approach, in which you would write all requirements, and create the documentation for the entire project.



Step 2: Then it's time to start painting, which is a 6-minute job. No iterations, just start doing your job, and deliver the project all at once after the time passes.

(6 minute

time)

Step 3: After all, all requirements are known, and the planning has been created to complete the task in time, on quality and on budget.

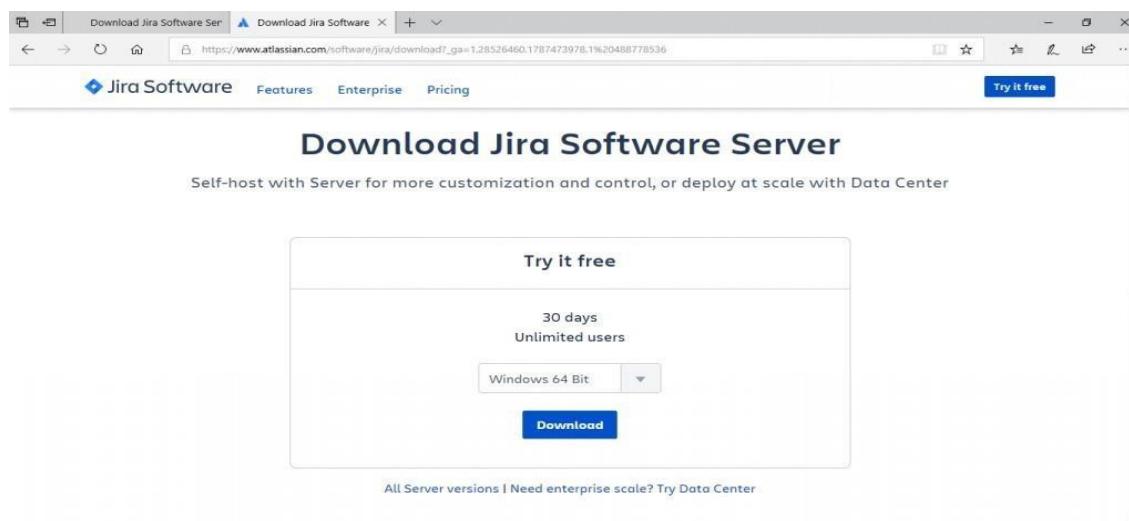
Step 4: When after 3 minutes business requirements are suddenly changed — let's say the government has just banned the color blue — you can observe the team getting stressed out. As a result we find many eggs thrown in the garbage bin, and the team starts all over again.

Step 5: As there is no time for evaluation during the project, the teams finish with only a few eggs completed. A bit disappointed about the sudden requirement change, the teams somehow aren't quite satisfied.

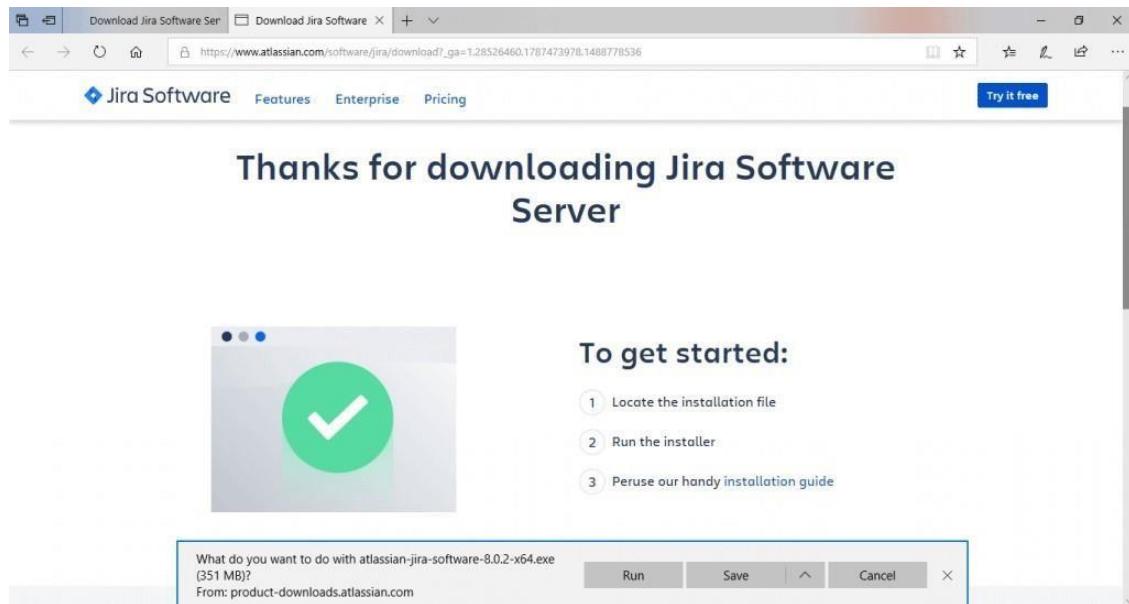
3. Create JIRA(similartool) account and learn interface

Step1 – To download and install Jira visit the official website of Atlassian. The link to the website is https://www.atlassian.com/software/jira/download?_ga=1.28526460.1787473978.1488778536

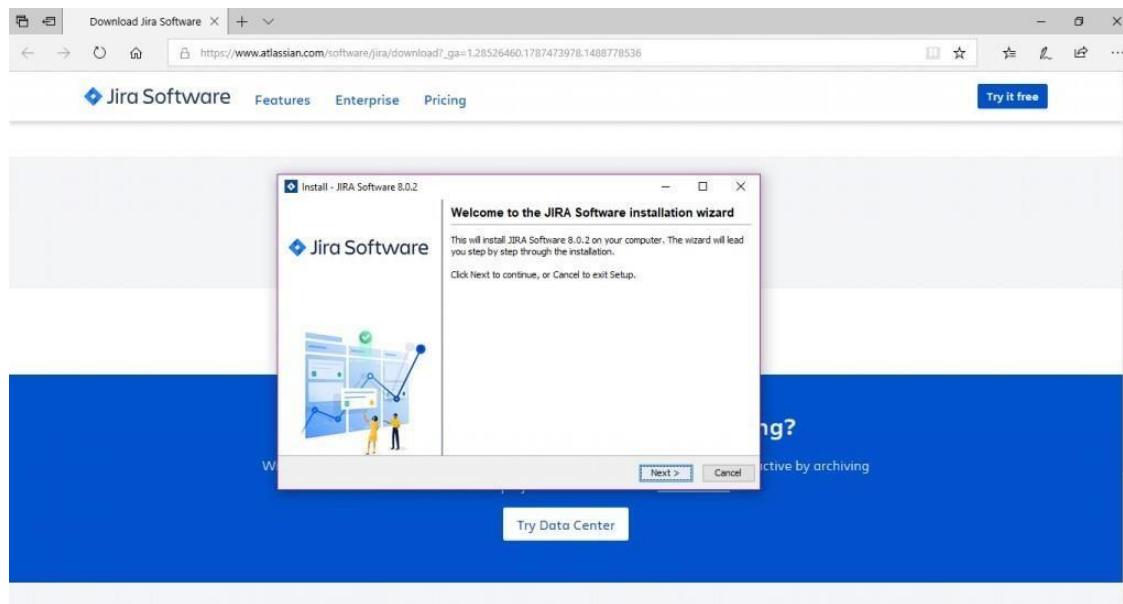
Step2 – After selecting the type of Operating System in which you want to install Jira, look for the Download option and click on it. You can change the operating system type by clicking on the dropdown.



Step 3 – Once Jira is downloaded, click on the .exe file. After this, you will see that the Run confirmation pop-up is displayed, click on RUN to proceed. You can refer to the screenshot below.

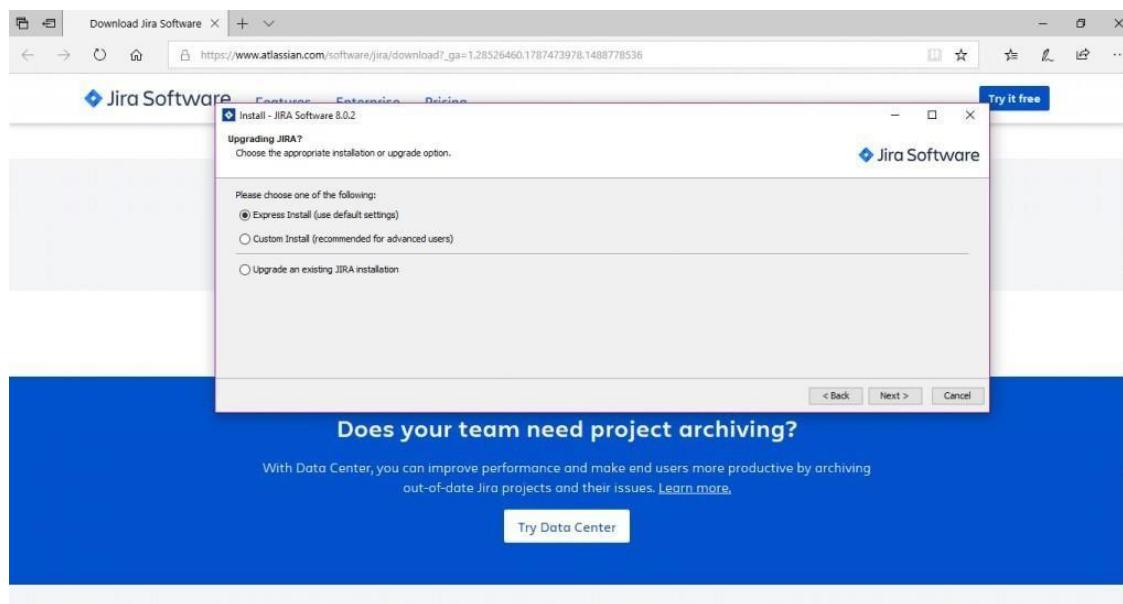


Step4 – Notice that the JIRA installation wizard would be displayed. If so, click on Next

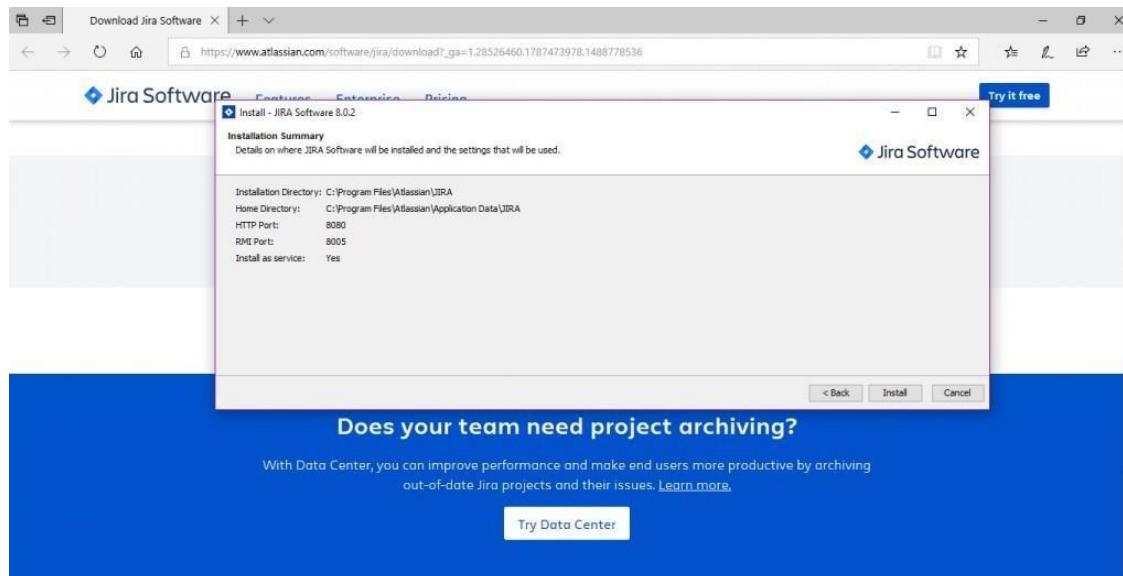


Step5 – Choose the desired installation option and then click on Next again.

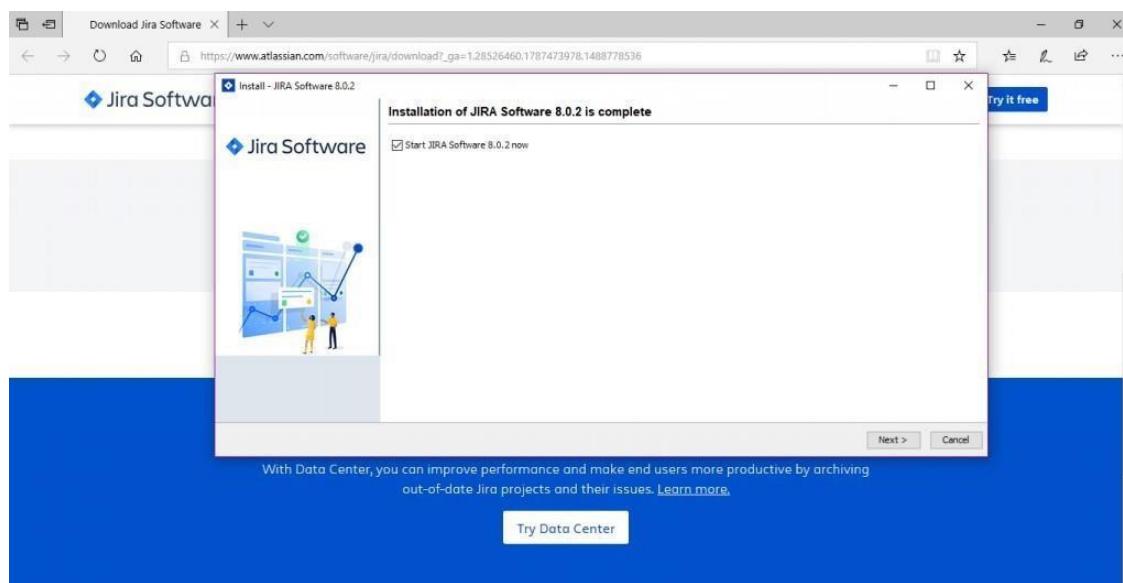
The installation summary would be displayed with the Destination Directory, Home Directory, RMIPort, HTTP Port etc. The screenshots for the same are attached below for your reference.



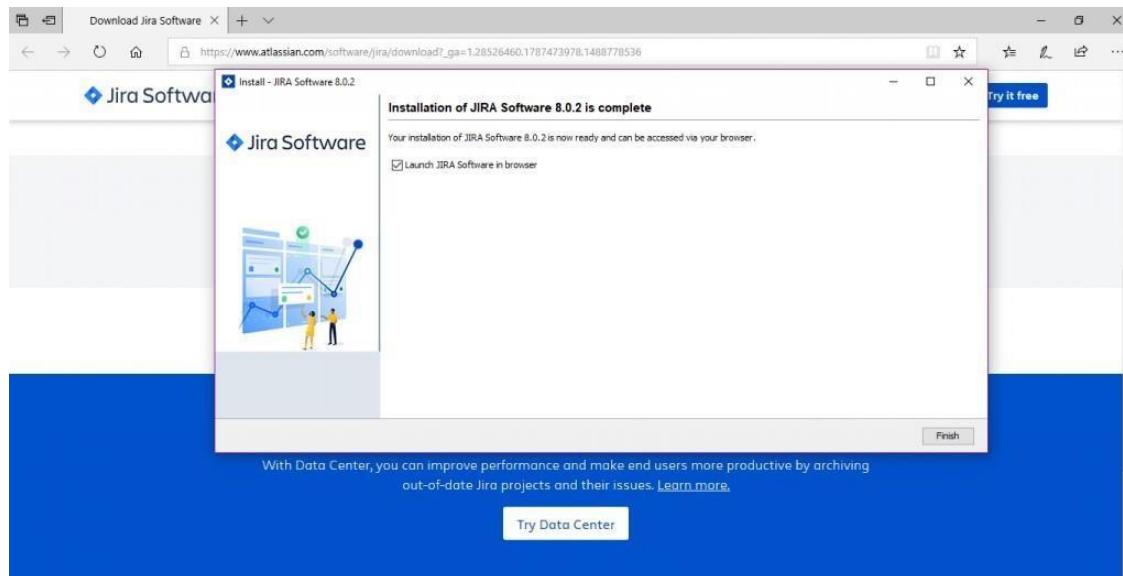
Step 6 – Click on Install. JIRA will start installing. It would take a few minutes for the installation to finish.



Step 7 – Please make sure that the “Start JIRA Software 8.0.2 now” checkbox is checked in order to start Jira automatically. After that click on Next, if not, it can be accessed using the Windows StartMenu shortcut.



Step8 – Click the Finishbutton.



i

How to use Jira software

To Create a project

- In the top-left corner, click the Jira home icon
- In the top-right corner, select Create project.

To Pick a template

The Jira template library houses dozens of templates across a variety of different categories, and is designed to get your team started quickly and successfully. You can choose a template from all the Jira products you own (Jira Software, Jira Service Management, and Jira Work Management). Today, Jira Software offers three templates

To Setup your columns

- Navigate to your team's board by selecting Active sprints (for Scrum projects) or Kanban board (for Kanban projects) in the project menu on the left
- Select more (•••) > Board settings in the top-right corner.
- Select Columns.
- Select Add column to add a column for each step in your team's process.

Create an issue

- In the project menu, select **Roadmap**. Start typing, then hit enter to create your first epic.

Invite your team

- In the project menu on the left, select **Project settings**.
- Select **People**.
- In the top-right corner, select **Add people**.
- Search for your team member's email address, and select **Add**.

WEEK3

1. Play and act agile ceremonies
2. Play different agile roles

Agileceremonies



The four scrum ceremonies are:

- Sprint Planning
- Daily Scrum
- Sprint Review
- Sprint Retrospective

Sprint planning: is an event in scrum that kicks off the sprint. The purpose of sprint planning is to define what can be delivered in the sprint and how that work will be achieved.

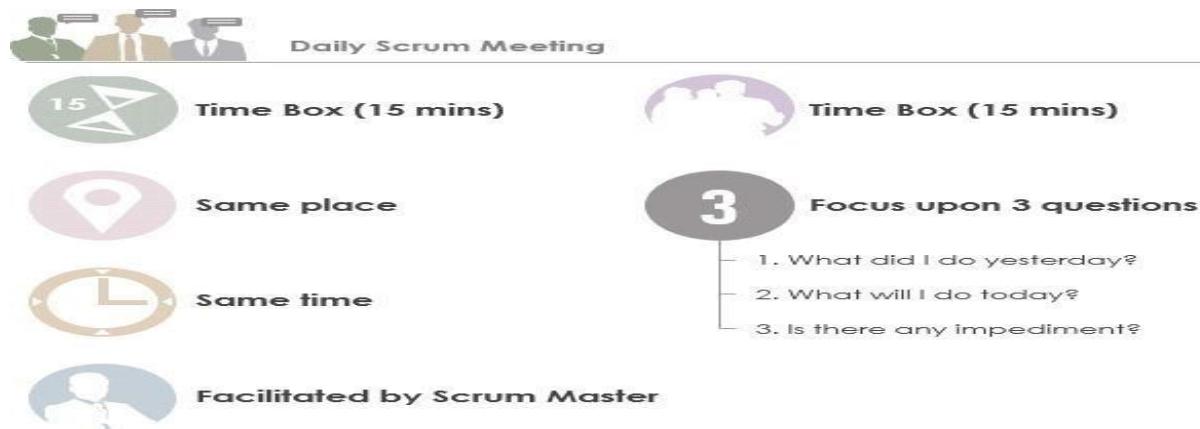
Sprint planning is done in collaboration with the whole scrum team.



- Sprint Planning is used to determine what the team will accomplish in the upcoming Sprint. The event itself has two parts.

DailyScrum:sometimesreferredtoas theDailyStandup,has atime-boxfor15minutesorless, andisspecificallyforthe benefit ofthe development team.

- Thegoalofthiseventisfortheteamtogetinsynconadailybasis,allowingforbettercollaborationand transparency.
- TheDailyScrumshouldbeheldatthesame timeeachdayandshouldnotincludeanyone outsideof the Scrum Team.



- TheDailyStandupmeetingsareusuallytime-boxedto**between5and15minutes**.

SprintReview:iswhentheteampresentstheirworkfromtheSprinttotheproject'sstakeholders.

- Itshouldcovernotonlytheworktheyaccomplished,butalsoopendiscussionsaroundthe work they were notableto complete.



A Sprint Review includes the following events:

- Attendees include the Scrum Team and key stakeholders if invited by the Product Owner;
- The Product Owner discusses the ‘done’ and ‘what has not been done’ items of the Product Backlog,
- The Development team elaborates the ‘done’ work, and justifies the Increment,
- The Product Owner discusses the Product Backlog. He or she projects likely target delivery dates based on progress to date (if needed)

Sprint Retrospective: is the primary event in which the Scrum Team can inspect and adapt their approaches based on their experiences from the previous sprints.

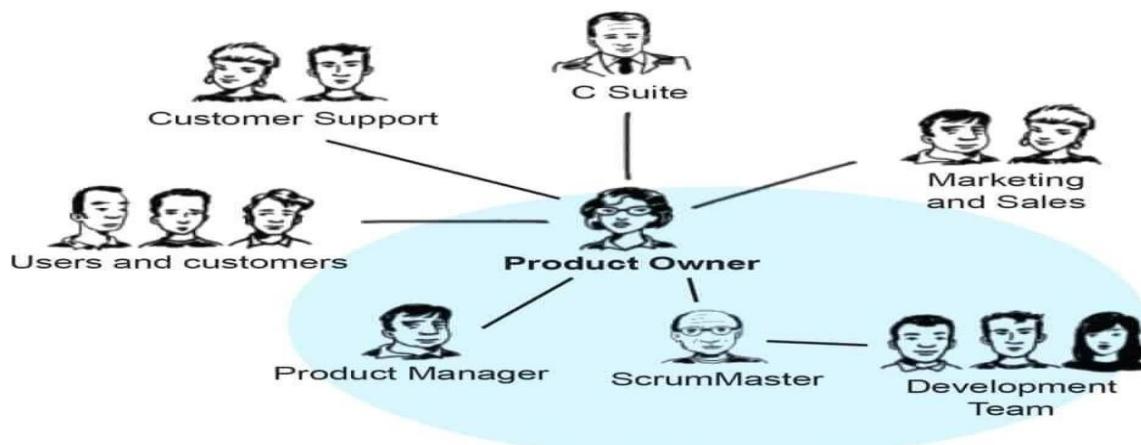
The sprint retrospective is usually held as the last activity of the sprint. It is a good idea to repeat the sprint retrospective on the same day, time and place.



- When you're performing a sprint retrospective, you want to capture any good ideas that come up which can then be applied to future sprints.

Roles and Responsibilities of Agile

- Product Owner** – Often an executive or key stakeholder, the Product Owner has a vision for the end product and a sense of how it will fit into the company's long-term goals.
- This person will need to direct communication efforts, alerting the team to major developments and stepping in to course-correct and implement high-level changes as necessary.



The product owner is a role on a product development team responsible for managing the product backlog in order to achieve the desired outcome that a product development team seeks to accomplish. Key activities to accomplish this include:

- Clearly identify and describe product backlog items in order to build a shared understanding of the problem and solution with the product development team
- Make decisions regarding the priority of product backlog items in order to deliver maximum outcome with minimum effort

output

- Determine whether a product backlog item was satisfactorily delivered
- Ensure transparency into the upcoming work of the product development team.

ScrumMaster—

The ScrumMaster is most akin to a project manager. They are guardians of process, givers of feedback, and mentors to junior team members.

- They oversee day-to-day functions, maintain the Scrum board, check in with team members, and make sure tasks are being completed on target



- The methodology is highly collaborative and requires efficient processes, and the results of the process depend upon the expertise of the ScrumMaster.
- Agile methodologies may have started in tech companies, but ScrumMaster jobs can be found in all kinds of industries and for all kinds of companies around the globe.

TeamMember—Teammembersarethemakers:front-andback-endengineers,copywriters,designers, videographers, you nameit.

- Teammembershavevariedrolesandskillsbutallareresponsibleforgettingstuffdoneon time andin excellent quality.
- Everyorganizationrequiresitsemployeeestoworktogetherasateamtoachieveitsgoals.Itisp ossibletohavedifferent individualsworkingtogether inagroup.
- But they must be team-oriented because effective teamwork depends on the charactertraitsof a goodteammember.



Whatarethequalitiesofagoodteammember?

1. Havinganidentity.
2. Beingcommitted.
3. Beingflexible..
4. Yourehumble.
5. Aneffectivecommunicator.
6. Aconsistentperformer.
7. Beingobjective.



SOFTWARE
ENGINEERING
DAILY



SOFTWARE ENGINEERING

WEEK4

1. casestudytounderstandtheimportanceofriskmanagementandmitigationof risk

TornadoIPTCaseStudy

1. WorkingwithTornadoIPT

- The Tornado Integrated Project Team (Tornado IPT) is part of the UK Ministry of Defence's (MOD's),
- Defence Equipment and Support (DE&S) organization.
- It is responsible for the provision of logistical support and capability development for the RAF Tornado F3 (Air Defence Variant) and the GR4 (Ground Reconnaissance) fleet until 2025,
- The requirement to drive down defence costs whilst maintaining outputs to the end customer has led the IPT instigating a transformation program which has resulted in the development of a series of availability-based contracting solutions with industry.

2. TheChallenge

- The management of Safety-related risk has always been paramount within the Tornado IPT and it was recognized that a similar rigour needed to be introduced to manage other risks and issues potentially impacting on all areas of IPT business.
- In partnership with MOD's Risk Process Owner (Through Life Procurement Management Support Group) a formalized project risk management process was developed for the Tornado IPT.
- Key to the successful implementation of this program would be the selection and deployment of a powerful risk management and analysis tool.

3. TheSolution

- After a comprehensive evaluation and assessment phase, Tornado IPT selected Predict! Risk Controller as best meeting its requirement.
- The intuitive nature of operation and integration with Predict! Risk Analyzer were key points identified.
- FeedbacksoughtfromotherDE&SIPT's who already operated the tool were also positive which reinforced these selection processes.

- Risk Decisions have worked closely with Tornado IPT to configure Predict! And develop custom templates for management reporting.
- They also provided a comprehensive training program to ensure that users were able to get up to speed quickly and realize the benefits from Predict! Risk Controller and Risk Analyzer.

4. The Benefits

- Risk Management is now co-ordinate across the IPT with regular monthly business and project reviews being conducted.
- The decision-making process is now risk-based, with clearly defined escalation processes in place, ensuring risk is managed at the level where it can be influenced.

LENDLEASE CORPORATION CASE STUDY

Lend Lease Corporation Limited is an Australian-based multinational company that specializes in project management and construction, property investment management and property development.

The company has over 11,485 employees operating in more than 40 countries around the world where the Bovis Lend Lease division constructs and manages large building projects.

The Challenge:

- Lend Lease is leading a development team that includes Bovis Lend Lease as a project and construction manager for the residential development and infrastructure for Phase One of the Stratford City project.
- This involves the construction of up to 3000 residential dwellings and related accommodation that are due for completion in late 2011.
- As the preferred development partner for Zones 2-7 of the Stratford City regeneration scheme, the company needed to implement the latest risk management technologies and model of proposed developments processes

to help ensure the successful delivery of this key project on budget and within tight timescales.

The Solution:

- Was selected after a rigorous ITT process which included a detailed analysis of all potential solutions.
- Risk Decisions was one of the only suppliers able to demonstrate a track record of successful implementations and delivery of high levels of support to organizations of a similar scale working on large complex projects.
- Prior to installation on Lend Lease's servers based in Atlanta, USA, Risk Decisions conducted a master class to introduce the concept of risk management at the highest level and a series of workshops with different stakeholder groups to determine configuration requirements.
- The company has also provided additional consultancy support to assist with stakeholder mapping and setting a framework to enable risk management to be rolled out and embedded as a core process and procedure.
- Lend Lease has deployed Predict!, the latest enterprise version of Risk Decisions' powerful suite of risk management and analysis software which includes Predict! Risk Controller and Predict! Risk Analyzer.
- It also intends to implement Predict! Risk Controller Lite, a unique solution that uses familiar spreadsheets to enable infrequent and remote users to provide regular updates on risks.
- This module will also be a key change management tool to assist in the embedding of risk management across the organization and will be deployed early in 2009.

2. How to use tools to manage and mitigate risks

WEEK5

1.ConductwarmupactivitiestoIgniteDesignThinking

ConductWarmupactivitytoigniteDesighnthinking.

<1.Sowhatarewarm-ups?

>Warm-ups can be described as exercises one normally runs right before the main proceedingstohelpparticipantsrelaxandeasepeopleintoagroupactivityorlearningsituation.Warm-upsgoverywellwithdesignthinkingbecausetheysupportmanyofits attributes, such as being curious and having an open mindset as well as beingmindfulof andcollaboratingwithother people.

>Consequently, a well-chosen warm-up can add real value to a design thinkingworkshop or project, but then, a poorly chosen warm-up can also have the oppositeeffect, making people feel nervous, uncomfortable and confused. So, when choosingyourwarm-up,chooseitpurposefully!Herearesomepointerstobare inmind:

Firstly,warm-ups are not separate of design thinking, they just have proven to be a useful way of promoting team work and supporting certain work attitudes.

- Warm-ups as well as other methods and exercises should generally be selected to suit the team, so you should know your audience and the people you are working with.
- While it's important to be mindful of the people, it is also vital to read the current mood and situation and select the warm-up accordingly — it should fit to the given circumstances.
- Let the participants understand that you don't just want to do a 'warmup' with them now. Communicate the goal and reflect on it afterwards if necessary. Especially when using an 'educative' warm-up, e.g. 'Marshmallow Challenge' before prototyping, you should debrief it — active reflection increases the likelihood of understanding and learning.
- For the conduct of the warm-up, give clear instructions and know when a short demo might be necessary for your audience to better understand the activity.
- Lastly, I would like to add that you as a facilitator should love and understand the warm-up you're choosing and get excited when using it.
Only then will the spark be transmitted to the participants.

> Below, you find some examples of what for and when you can use a warm-up:

- Create a positive group atmosphere
- Help people to get to know one another (better)
- Break down social barriers
- Reduce pressure
- Energize
- Distract the group temporarily to better focus afterwards
- Prepare the team for a certain mode of working/phase/mindset.

WEEK6

1. Organize role play for requirement activities

What is roleplay?

Role-play or role-paying is the changing of one's behavior to assume a role, either unconsciously to fill a social role, or consciously to act out an adapted.

Roleplay objectives

- Be very clear about what you want people to get out of the role playing experience.
- Clear thinking and role play preparation result in clear outcomes.
- Are you assessing skills or are you developing them? If you are assessing people, they need to know the competency.
- People also need to trust that the role play will have the same level of challenge for them and their peers.
- Are you giving everyone the same level of challenge, or are you flexing according to the level of skill

Roleplaying placement - where in the agenda?

- In skills development programmer, trainers and facilitators often schedule a role play exercise at the end of a course
- People become more comfortable with the idea of 'performing' in public; and, it more fairly shows role
- They get feedback in the form of notes from the director, which they will immediately apply to the work in hand.
- Be realistic in your ambitions for the role play. For instance, if you are teaching a complex.
- If you don't have time to eventually get the participants doing the whole thing properly, indeed, with plenty of rehearsals and revisiting, then just do a part of it.

Roleplay briefing

- Allow the other participants to observe the role play and give their comments afterwards.
- Explain clearly what you want them to look out for.
- It is important though that the (non-professional role player) person or persons involved in the role play go first.

Roleplay development

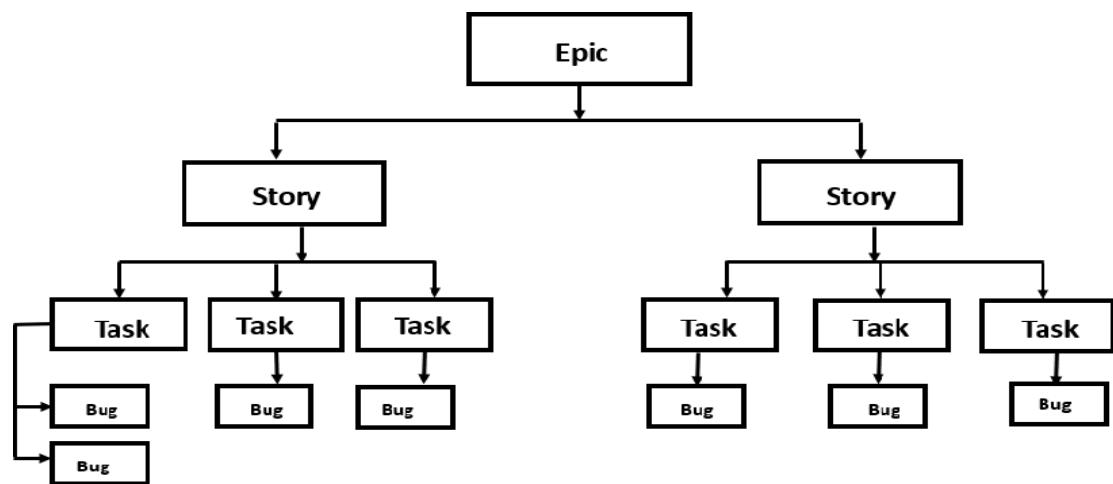
- Play allows children to use their creativity, developing their imagination, dexterity, and physical, cognitive, and emotional strength.

- Play is important to healthy brain development.

Types of Role Play

- Illiterate
- Semi-Literate
- Literate
- Advanced Literate

1. Identify a problem and prepare requirement document or Epics and user stories



EPIC:

Develop small Retail application for online shopping

Story:

1. Develop product search UI screen [description-gather product items, add in products screen, create search facility for this screen]

2. Login

"As a customer, I want to create a password on my account, so that I can login.

Task

- Allow email addresses in the format name@gmail.com.
- Verify password field did not greater than 20 characters.
- Validated accounts can be logged into.

registration form

“As a customer, I want to be able to register online so that I can start shopping online”.

Task

- User can only submit a form by filling in all required fields.
- The email user provided must not be a free email.
- Submission form same IP can only be made three times within 30 minutes. User will receive a notification email after successfully registration

Changes to cart:

“As a customer, I want shopping cart functionally to easily purchase items online.”

Task

- Able to add an item to shopping cart by entering the quantity.
- Prompted “please enter the quantity” when the quantity is unfilled when adding item.
- Prompted “sorry, item is temporarily out of stock” when trying to add item without enough stock.
- The quantity is “1” by default
- Unable to enter non-number in quantity field
- Makes sure the items above are all passed in the build of firefox, chrome and edge.

Payment:

Userstory:

“As a customer, I want to be able to payment online so that I can easily purchase item in online shopping”.

Task

- The user given option with various modes of payment (online payment through credit / debit cards via net or mobile banking or cash on delivery) out of which the user chooses one. The user chooses mode of transaction authentication of bank details.

Userstory:

“As a customer, I should be able to log out from the online shopping system at anytime”.

Task

- User can logout by pressing the logout button.
- After pressing logout will bounce to the login page
- Signing out will delete information indicating the identity of the user from the device.

report generation:

userstory:

- “As a customer, I want to be able to report generation of the item, so easily help to the online shopping system administrator”.

Task

- After ordering for the product, the system will send one copy of the bill to the customer’s email address and another one for the system database.

Bug

1. Shopping card screen not working properly
2. Issue while searching product in product search screen (description-issue fixed and unit testing done please proceed with QATesting)

4. Draw UML diagram for given use case

What is use case diagram?

In the Unified Modelling Language (UML), a use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system. To build one, you'll use a set of specialized symbols and connectors. An effective use case diagram can help your team discuss and represent:

- Scenarios in which your system or application interacts with people, organizations, or external systems
- Goals that your system or application helps those entities (known as actors) achieve
- The scope of your system

When to apply use case diagrams

- Representing the goals of system-user interactions.
- Defining and organizing functional requirements in a system.
- Specifying the context and requirements of a system.
- Modelling the basic flow of events in a use case.

3. Draw UML diagram for given use case

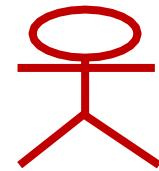
- Use case diagrams are usually referred to as behaviour diagrams
- Used to gather requirements of a system.
 - Used to get outside view of a system show the interaction between actors and use case

Components of use case diagram

- Components of use case diagram

- Functionalities to be represented as a use case
- Actors
- Relationships among the use cases and actors

Actors



UseCases



Systems



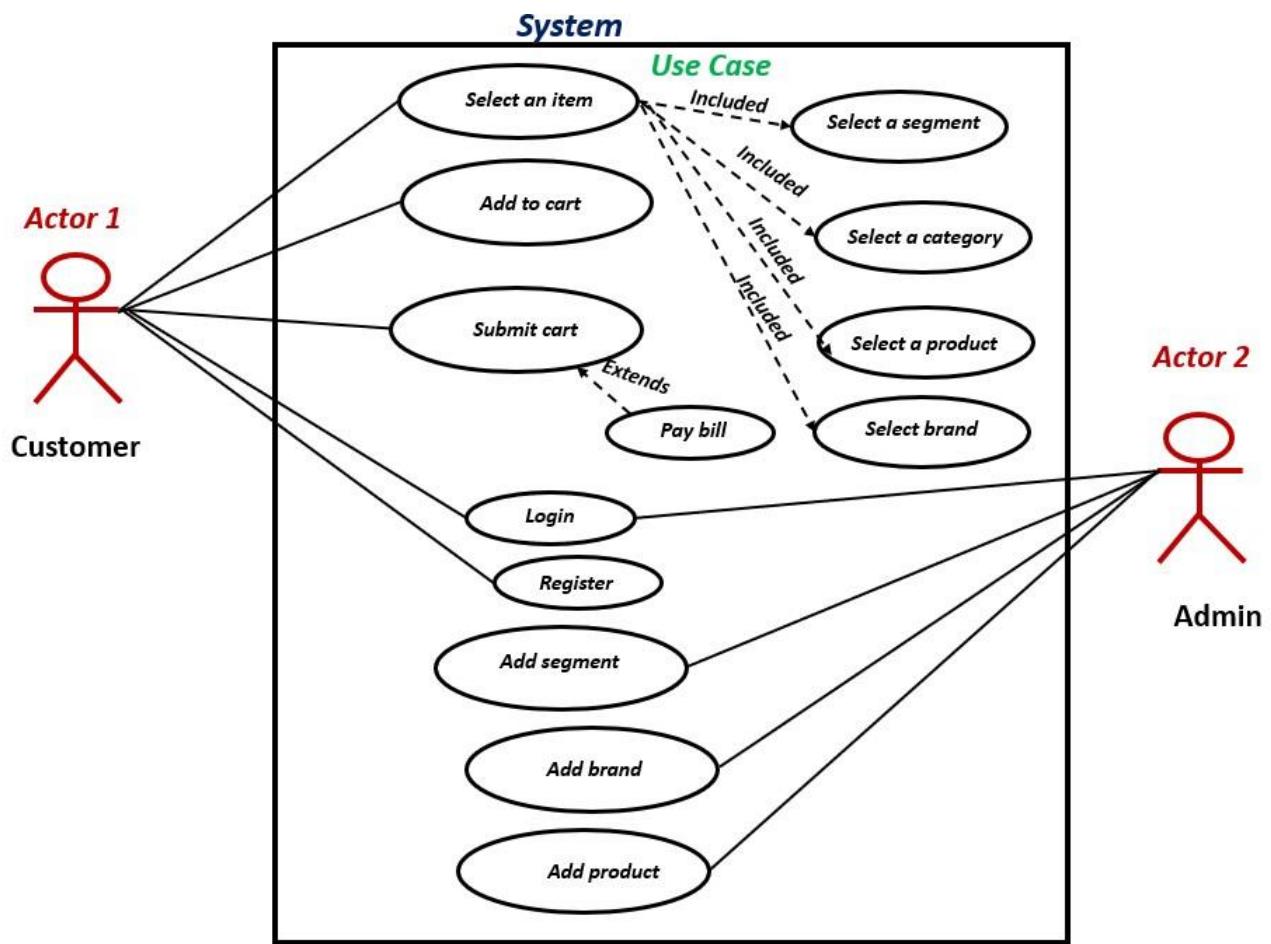
Relationships



Actors: Who interacts with the system

UseCase: functionality or services provided by the system

Relation: Relation between actors and the system.



WEEK7

1. Createdetaileduserstoriesfortheaboveidentifiedproblem

Online

ShoppingProject

Task:

Basedonabovescenario,youareexpectedtoperformthefollowingtask

1. Identify atleast one epicandsevenuser storyfromabovescenario.Linkthestorytoepic
2. Getfree JIRAAccountandcreateScrum project
3. Enterthe Backlog(Epic,story, subtask andBug)inJIRA
4. Makeareleaseplan,byassigningstoriestothreeps
5. Startandcompleteonesprint
6. Submit screenshot of Epic, Backlog, release plan, Story, Scrum board with task in variousstates

EPIC:

DevelopsmallRetailapplicationforonline shopping

Story:

3. Develop product search UI screen [**description-gather product items, add in productscreen,createsearchfacilityfor thisscreen]**

Task

Findproduct itemsasprovidedbyuser

4. Developproductsearchservice
5. DevelopshoppingCARD UIforselectedproduct
6. DevelopshoppingCARDservice
7. DevelopsearchedproductonlineorderUIcomponent
8. Developsearchedproductonlineorderservice
9. DevelopsearchedproductonlinepaymentUIcomponents

Bug

4. Shoppingcardscreennotworkingproperly
5. Issue while searching product in product search screen (description-issue fixed and unittestingdonepleaseproccedwithQAtesting)

6. OUTPUT

7. EPIC:

The screenshot shows a Jira Software interface. On the left, there's a sidebar with project navigation: Online shopping (Software project), PLANNING (Roadmap, Backlog), DEVELOPMENT (Code, Project pages, Add shortcut, Project settings). The main area displays a project board for 'Online shopping / OS-1'. A story titled 'Develop small Retail application for online shopping' is selected. Below it, a child issue 'OS-2 1. Develop product search UI screen' is listed under 'Child issues'. The 'Activity' section shows comments and history. A 'Quickstart' sidebar on the right provides links to create a project, issue, team, tools, and mobile app. The Windows taskbar at the bottom shows various pinned icons.

Storycreate:aftercreatingstoryclickoncreatebutton

This screenshot shows the 'Create issue' dialog box in Jira. The 'Project' dropdown is set to 'Retail Online shopping (ROS)'. The 'Issue type' is selected as 'Story'. The 'Summary' field contains '2. Develop product search service'. The 'Description' field contains '1. Develop product search service'. At the bottom right of the dialog is a 'Create' button. The 'Quickstart' sidebar is visible on the right side of the screen.

8. Story

The screenshot shows the Jira Software interface for a project titled "Retail Online shopping". A task titled "1. Develop product search UI screen" is being created. The task details include:

- Description:** Develop product search UI screen
- gather product items**
- add in product screen**
- create search facility for this screen**
- Activity:** Show: All, Comments (selected), History, Newest first
- Details:**
 - Assignee: smital kaginkar
 - Labels: None
 - Sprint: None
 - Story point estimate: None
 - Reporter: saviti jambagi
- Created:** 6 minutes ago, Updated 6 minutes ago

A sidebar on the right is titled "Quickstart" and provides links to "Create a project", "Create an issue", and other Jira features.

Task: creating task into the story 1

The screenshot shows the Jira Software interface for a project titled "Retail Online shopping". A task titled "1. Develop product search UI screen" is open, and a new child issue is being added:

Child issues (Subtask)

- ROS-9** Find product items as provided by user

The "TO DO" tab is selected. The task details are identical to the main story:

- Description:** Develop product search UI screen
- gather product items**
- add in product screen**
- create search facility for this screen**
- Activity:** Show: All, Comments (selected), History, Newest first
- Details:**
 - Assignee: smital kaginkar
 - Labels: None
 - Sprint: None
 - Story point estimate: None
 - Reporter: saviti jambagi
- Created:** 6 minutes ago, Updated 6 minutes ago

A sidebar on the right is titled "Quickstart" and provides links to "Create a project", "Create an issue", and other Jira features.

Backlog

Backlog

- ROS-2 1. Develop product search UI screen DEVELOP SMALL RETAIL APPLICAT...
- ROS-10 1. Shopping card screen not working properly
- ROS-3 2. Develop product search service
- ROS-11 2. Issue while searching product in product search screen
- ROS-4 3. Develop shopping CARD UI for selected product
- ROS-5 4. Develop shopping CARD service
- ROS-6 5. Develop searched product online order UI component DEVELOP SMALL RETAIL APPLICAT...
- ROS-7 6. Develop searched product online order service
- ROS-8 7. Develop searched product online payment UI components

+ Create issue

Quickstart

- Create a project
- Create an issue
- Issue
- Issues are individual pieces of work that you assign to teammates.
- Issues can be tasks or stories.
- Show me View issue tutorial
- Invite your teammates
- Connect your tools
- Get the mobile app

Sprint

Backlog

- ROS Sprint 1 Add dates (9 issues)
- ROS-2 1. Develop product search UI screen DEVELOP SMALL RETAIL APPLICAT...
- ROS-10 1. Shopping card screen not working properly
- ROS-3 2. Develop product search service
- ROS-11 2. Issue while searching product in product search screen
- ROS-4 3. Develop shopping CARD UI for selected product
- ROS-5 4. Develop shopping CARD service
- ROS-6 5. Develop searched product online order UI component DEVELOP SMALL RETAIL APPLICAT...
- ROS-7 6. Develop searched product online order service
- ROS-8 7. Develop searched product online payment UI components

+ Create issue

Quickstart

- Create a project
- Create an issue
- Issue
- Issues are individual pieces of work that you assign to teammates.
- Issues can be tasks or stories.
- Show me View issue tutorial
- Invite your teammates
- Connect your tools
- Get the mobile app
- Find help

Start Sprint

9 issues will be included in this sprint.

Sprint name *

Duration *

2 weeks

Start date *

7/6/2022 1:36 PM

End date *

7/20/2022 1:36 PM

Sprint goal

complete all story with a sprint

Start Cancel

Scrumboard: scrumboard initial condition

ROS Sprint 1

complete all story with a sprint

9 days remaining Complete sprint

TO DO 9 ISSUES

1. Develop product search UI screen
DEVELOP SMALL RETAIL APPLICAT...

1. Shopping card screen not working properly
ROS-10

2. Develop product search service
ROS-3

2. Issue while searching product in product search screen
VT

IN PROGRESS

DONE ✓

GROUP BY None Insights

Quickstart

Create a project

Customize your board

Create an issue

Issue are individual pieces of work that you assign to teammates.

Issues can be tasks or stories.

Show me View issue tutorial

Invite your teammates

Connect your tools

Get the mobile app

Find help

Dismiss Quickstart

ROS Sprint 1
complete all story with a sprint

TO DO 7 ISSUES

- 2. Develop product search service (ROS-3)
- 2. Issue while searching product in product search screen (ROS-11)
- 3. Develop shopping CARD UI for selected product (ROS-4)
- 4. Develop shopping CARD service (ROS-5)

IN PROGRESS 2 ISSUES

- 1. Develop product search UI screen (ROS-2)
- 1. Shopping card screen not working properly (ROS-10)

DONE 1

- 1. Shopping card screen not working properly (ROS-2)

Scrumboardwithtaskin variousstates:

ROS Sprint 1
complete all story with a sprint

TO DO 5 ISSUES

- 3. Develop shopping CARD UI for selected product (ROS-4)
- 4. Develop shopping CARD service (ROS-5)
- 5. Develop searched product online order UI component (ROS-6)

IN PROGRESS 2 ISSUES

- 2. Develop product search service (ROS-3)
- 2. Issue while searching product in product search screen (ROS-11)

DONE 2

- 1. Shopping card screen not working properly (ROS-10)
- 1. Develop product search UI screen (ROS-2)

The screenshot shows the Jira Software interface for the "Retail Online shopping" project. The left sidebar includes links for "Roadmap", "Backlog", and "Board". The main area displays a "Roadmap" for "ROS Sprint 1" spanning from July to August. A list of tasks under "ROS-1" is shown, all labeled as "IN PROGRESS". To the right, a sidebar provides quick access to "Monitor and manage risk", "Create an issue", "Invite your teammates", "Connect your tools", "Get the mobile app", and "Find help". The bottom of the screen shows the Windows taskbar with various pinned icons.

Sprint	IN	JUL	AUG
ROS Sprint 1			
ROS-1 Develop small Retail application ...	IN PROGRESS	IN PROGRESS	
ROS-2 1. Develop ...	IN PROGRESS	IN PROGRESS	
ROS-10 1. Shopping c...	IN PROGRESS	IN PROGRESS	
ROS-3 2. Develop ...	IN PROGRESS	IN PROGRESS	
ROS-11 2. Issue while ...	IN PROGRESS	IN PROGRESS	
ROS-4 3. Develop shopping ...	TO DO	TO DO	
ROS-5 4. Develop shopping ...	TO DO	TO DO	
ROS-6 5. Develop searched ...	TO DO	TO DO	
ROS-7 6. Develop searched ...	TO DO	TO DO	
ROS-8 7. Develop searched ...	TO DO	TO DO	

WEEK8

1.Create sitemap and wireframe for above created user stories

Create Sitemap wireframe for above created user stories. (Tools such as Sketch, Adobe XD, Figma, etc. can be used. **NOTE:** Download any of the tools mentioned in the title.

Step-1: Download the Figma Application Through Any

browser, Step-2: Now install the application in the desktop

Step-3: Open the application and create an account using Google account

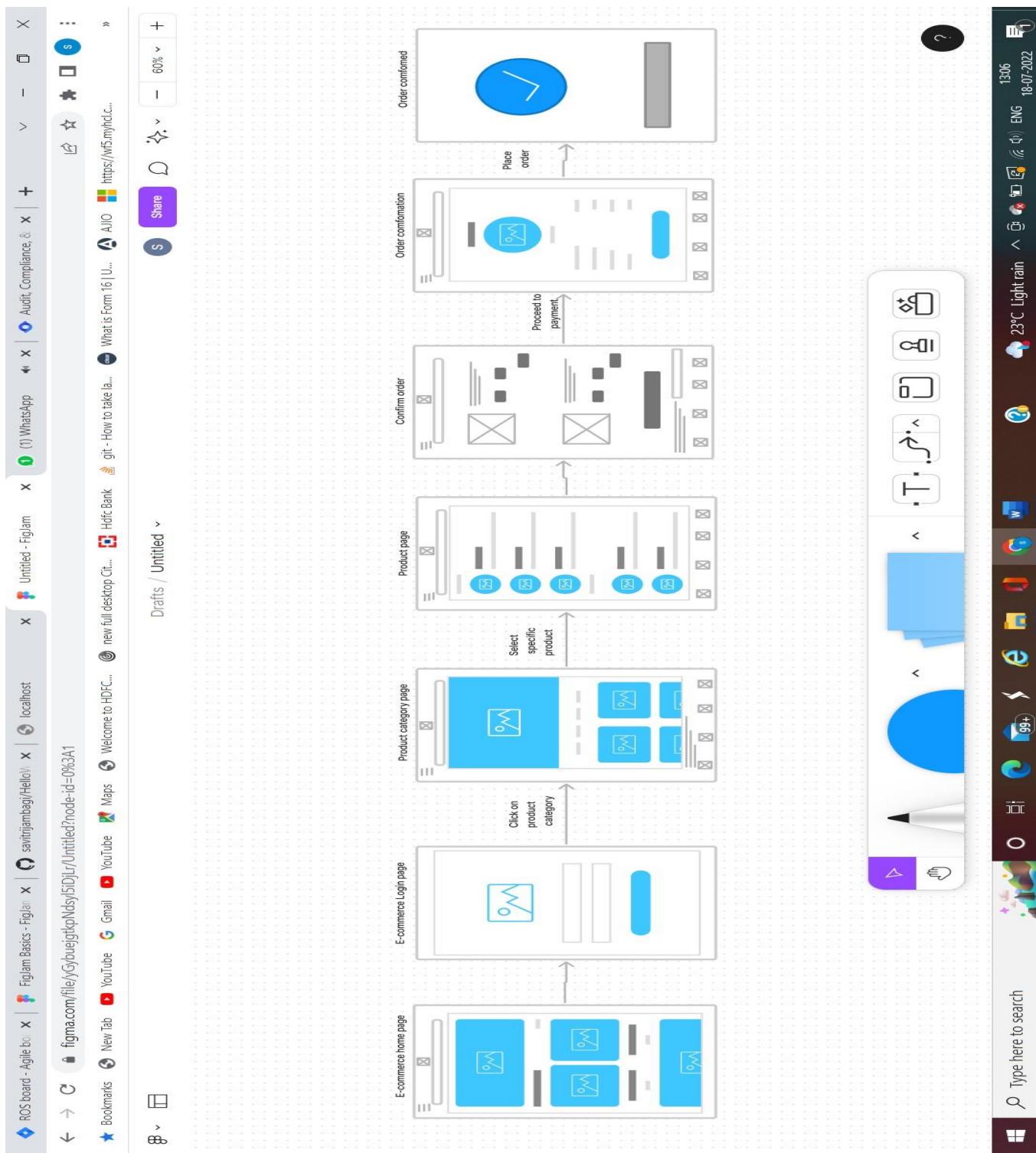
Step-4: Now again Login into Figma application and create a new page using new figjam, Step-

5: Using Clipboard, click on ellipse and choose it as square,

Step-6: Make some clips by pulling blocks from

ellipse, Step-7: arrange the blocks as shown

in the above diagram.



WEEK9

1.CreateGit(similartool)accountandconfigurerepository

StepstopublishGitartifacts

A developer should follow these five steps to publish GitHub Actions artifacts for download:

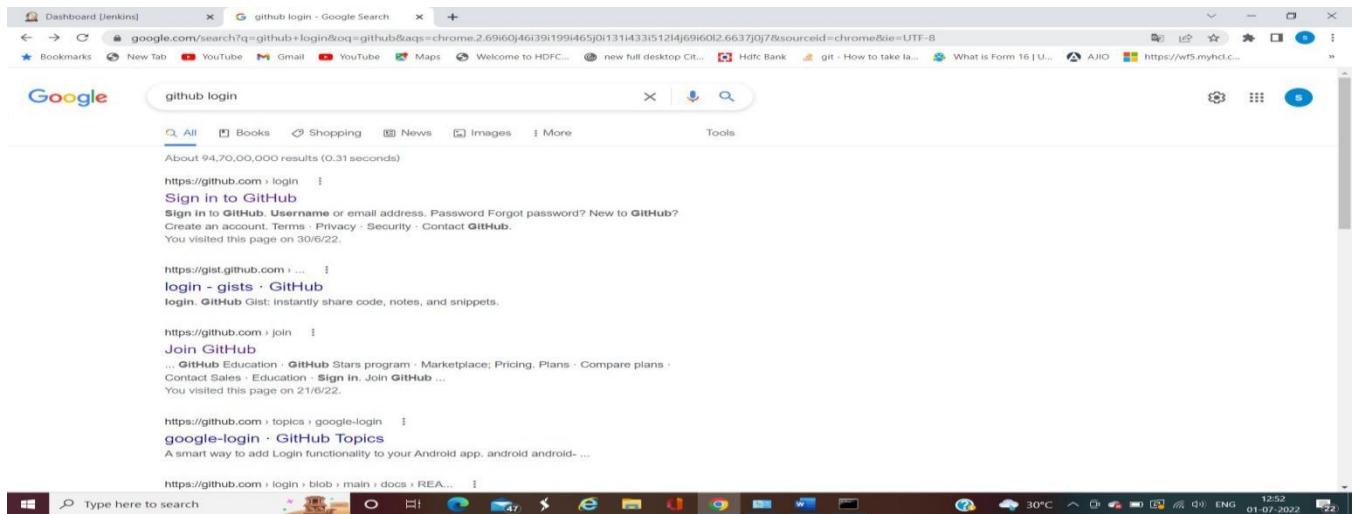
1. Perform GitActions build steps
2. Create a temporary folder in the container being used
3. Copy all artifacts of interest into that temporary folder
4. Use GitHub's upload-artifact action
 1. Provide a meaningful name for the artifact download link
 2. Specify the path to the folder containing your GitHub Action artifacts
5. Run the GitHub Actions workflow and find the published artifacts on the workflow's build page
6. The easiest way to demonstrate how GitHub's artifact upload action works is to add a step to a simple workflow that creates a temporary directory. Then, use the touch and echo commands to create a few simple files. Once a developer completes this action, the files will publish as artifacts.

Published artifacts in GitHub

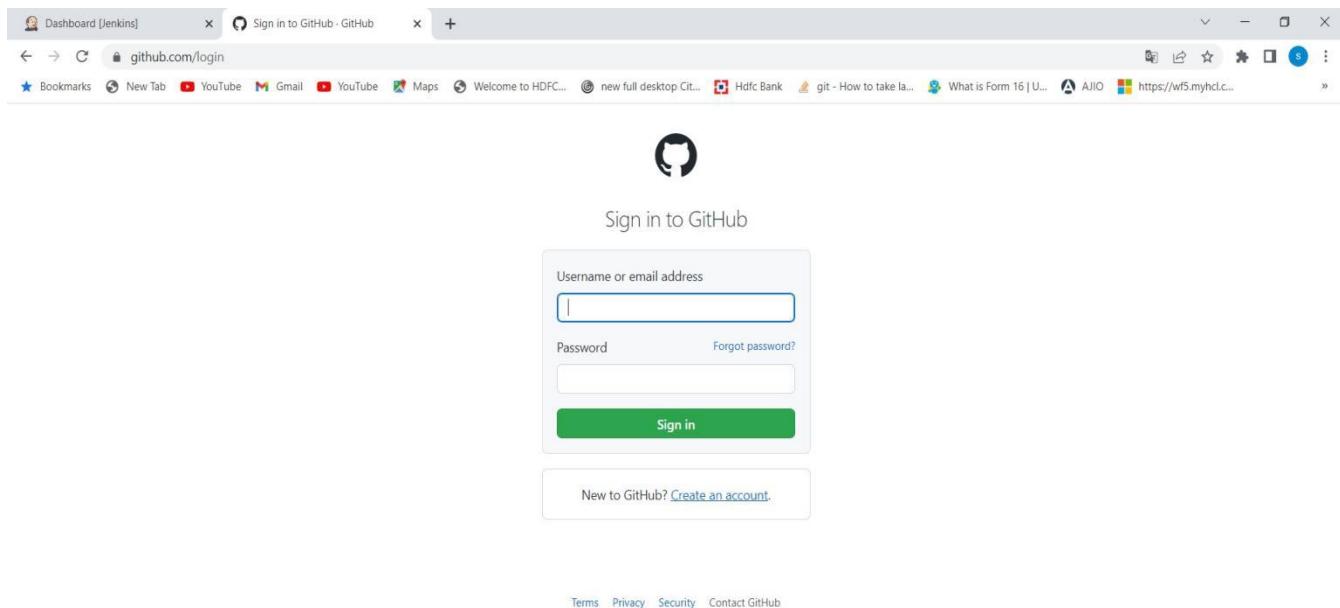
If a developer isn't familiar with the echo and output switch, the following command will create a file on the local filesystem named alpha.html with the text 'alpha' contained within it:

Step 1: open google download git hub software setup

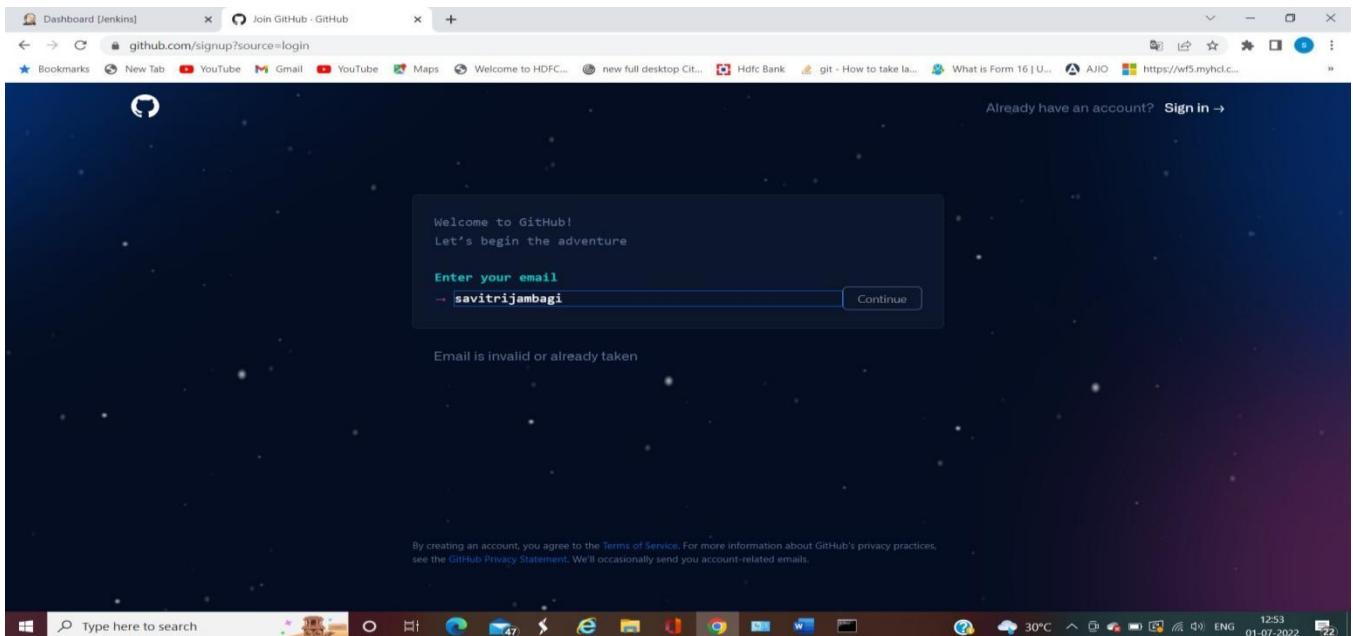
Step2:create accountinGitHub



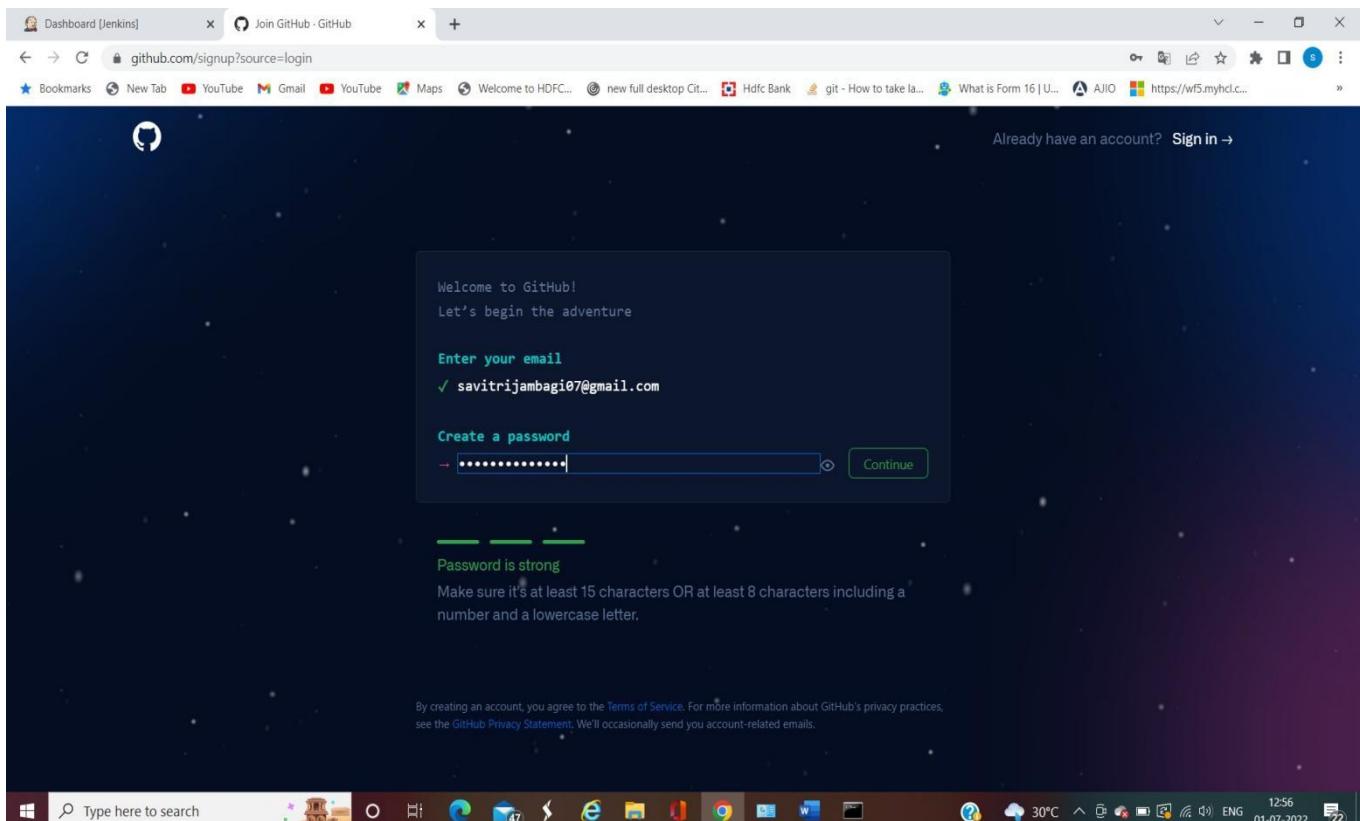
Step3:Setusernameandpassword



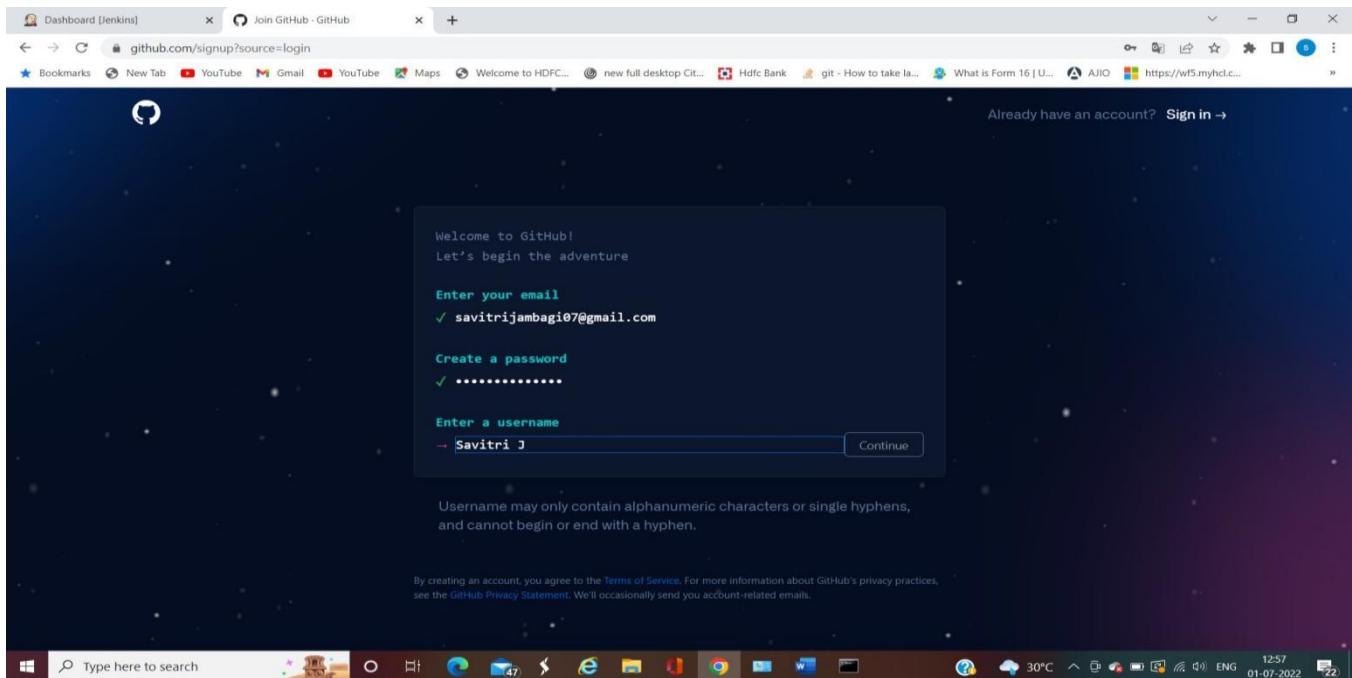
Step4: entermailidandcontinue



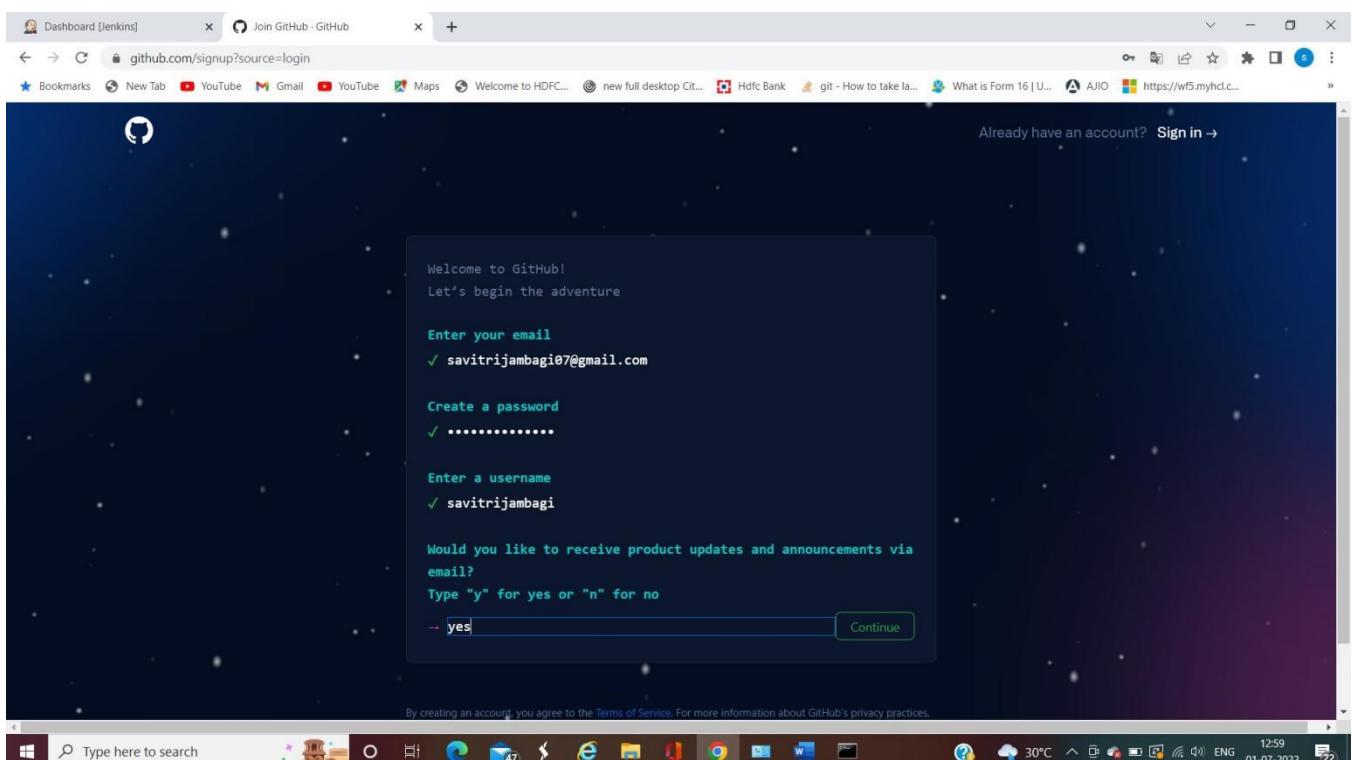
Step5:Createnewpasswordandcontinue

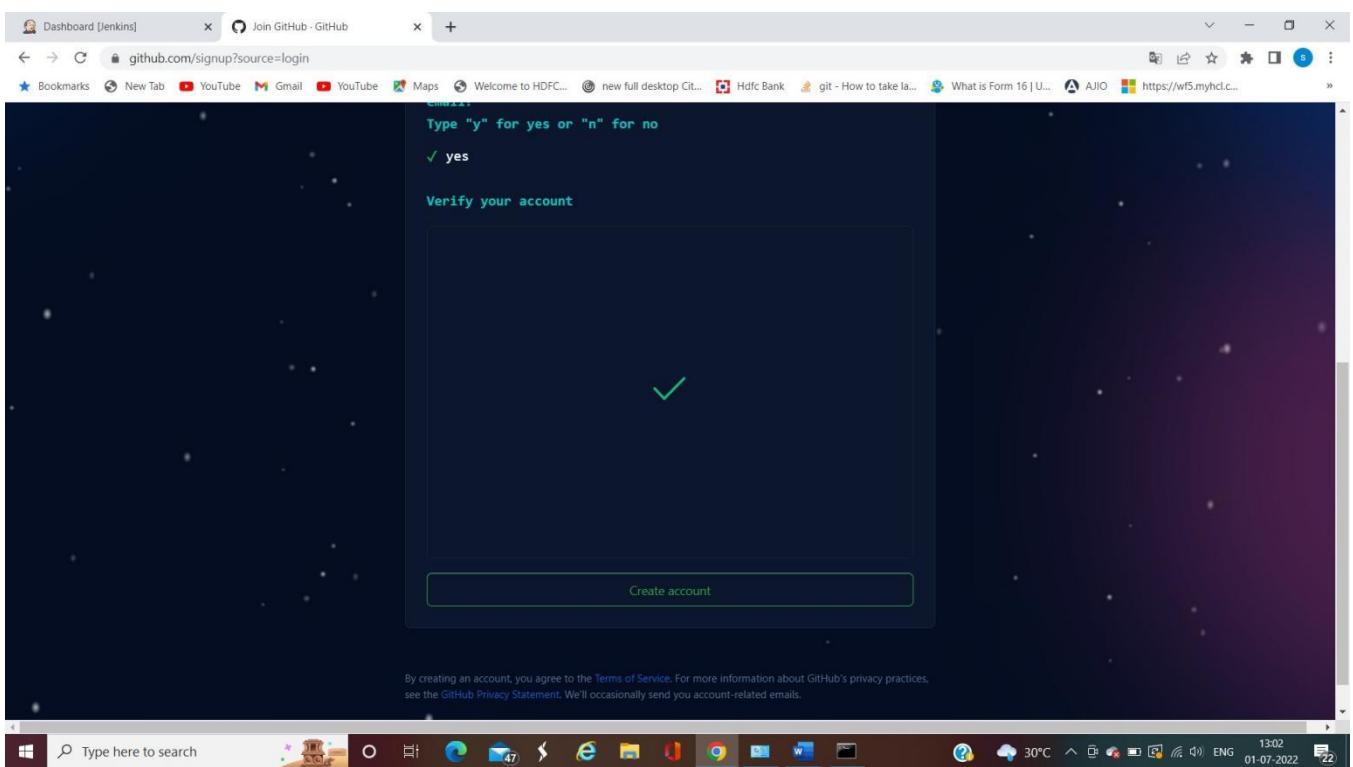
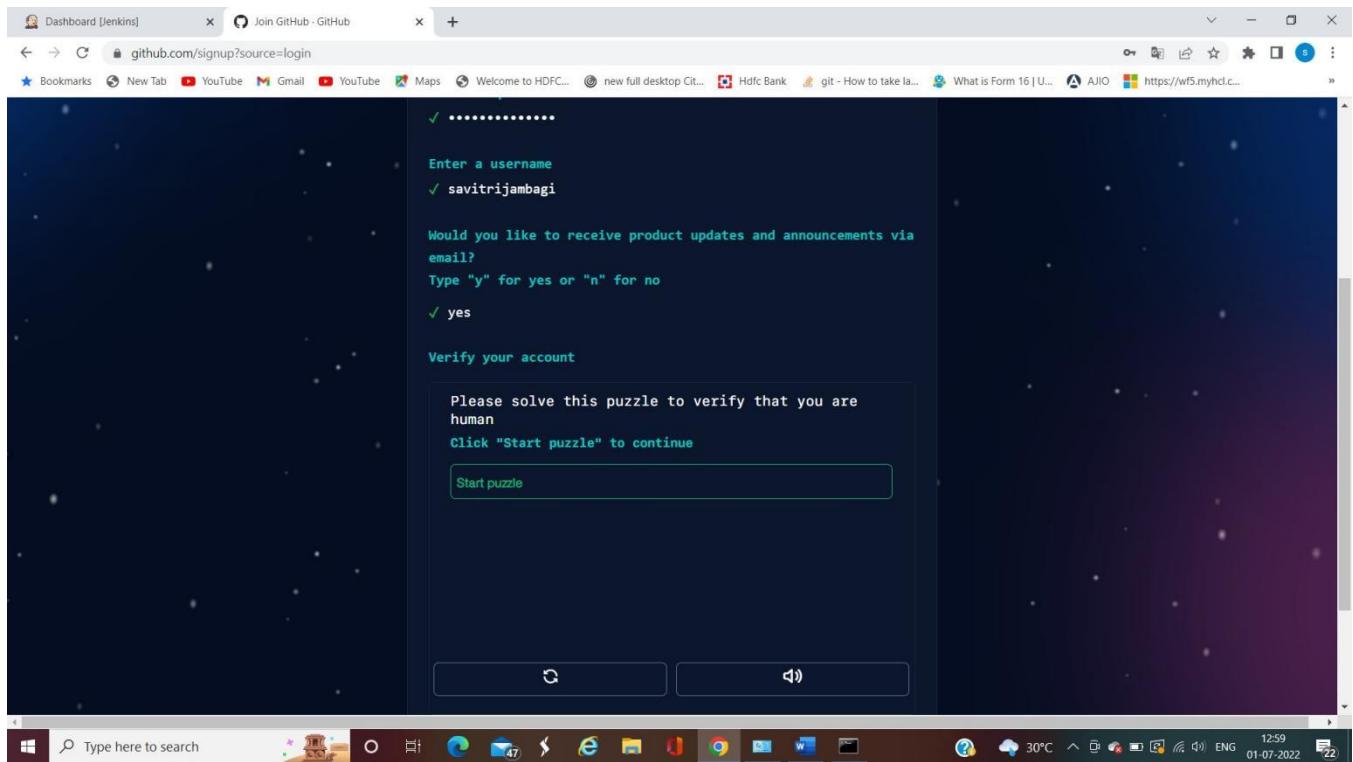


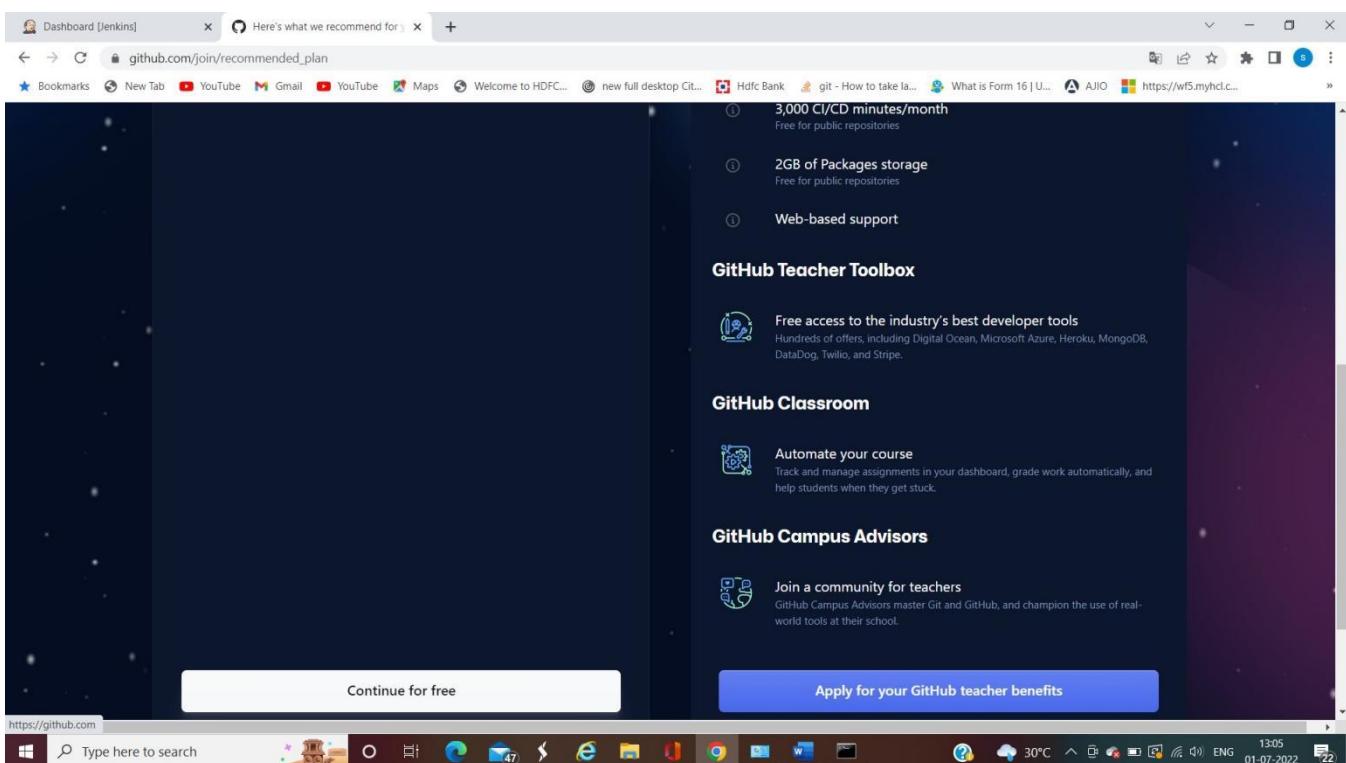
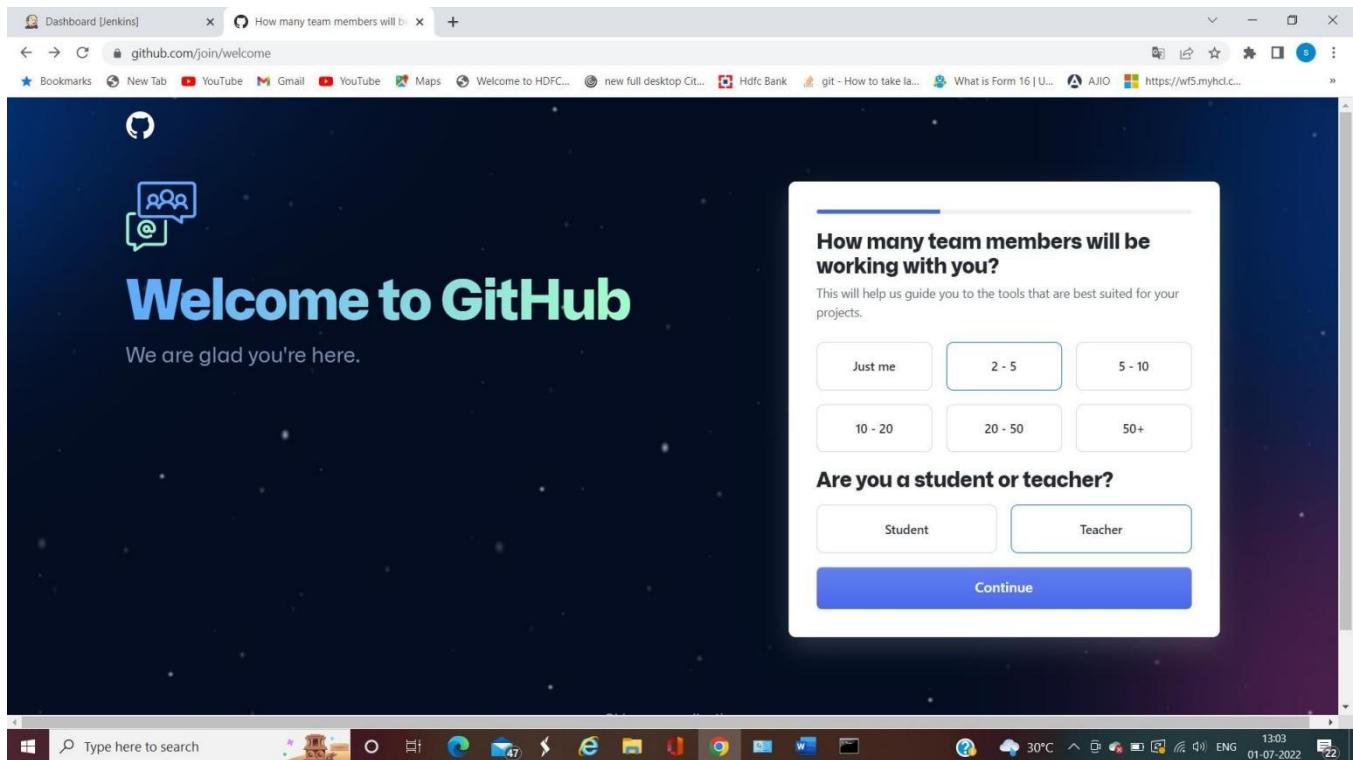
Step6:Enterusername andcontinue



Step7:Typeyes







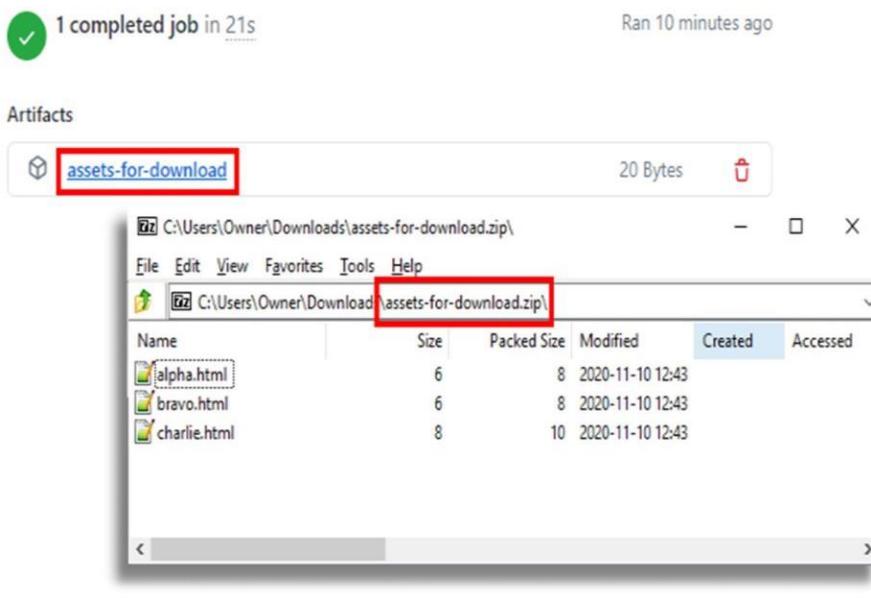
A Git repository is a virtual storage of your project.it allows you to save versions of your code,which you can access when needed

```
echo 'alpha' > alpha.html
```

The screenshot shows a GitHub Actions workflow run titled "Publish GitHub Actions Artifacts Example". It displays one completed job that ran 10 minutes ago. An artifact named "assets-for-download" is listed, which is 20 Bytes in size and has a delete icon. A note below explains that artifacts can be downloaded from the workflow summary page.

Workflow artifact downloads

- When this build runs, the status page of the workflow will include a link to download a file named `assets-for-download`.
- `zip`, which will contain the three files named `alpha.html`, `bravo.html` and `charlie.html`.
- This proves that the script works and makes the GitHub Action artifacts available for download.



The zip file downloaded as a GitHub Action artifact contains all of the selected build files.

Learn version control and configuration management with GIT:

Step 1: On your computer, you need to install Git first. The process will depend on your operating system: please follow the instructions below by clicking the relevant button.

Linux

Windows

macOS

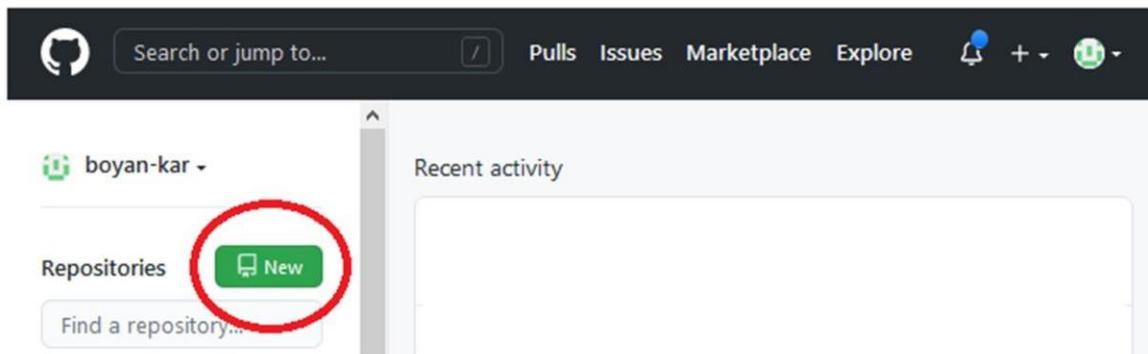
What is a repository?

You can think of a repository (*aka* a repo) as a “main folder”, everything associated with a specific project should be kept in a repo for that project. Repos can have folders within them, or just be separate files.

2. Create your own repository and project folder structure

To make a repository, go to `Repositories/New repository` - choose a concise and informative name

that has no spaces or funky characters in it.



Step 3: Let's create a new private repository. You can call it whatever you like if the name is available.

Create a new repository

The screenshot shows the 'Create a new repository' form. At the top, there's a section for 'Repository template' with a dropdown menu set to 'No template'. Below that, the 'Owner' field is set to 'boyan-kar' and the 'Repository name' field contains 'my-first-repository', which has a green checkmark next to it. A note below says, 'Great repository names are short and memorable. Need inspiration? How about [symmetrical-couscous](#)?'. The 'Description (optional)' field is empty. At the bottom, there are two radio button options: 'Public' (unchecked) and 'Private' (checked). A red arrow points to the 'Private' radio button. Below the radio buttons, a note says, 'You choose who can see and commit to this repository.'

Step4: Click on `Initialise repository with a README.md file`. It's common practice for each repository to have a `README.md` file,

Step5: We will also create a `.gitignore` file. This file lets Git know what kind of files should not be included in the repository.

Once you are ready, click on `Create repository`.

-  **Public**
Anyone on the internet can see this repository. You choose who can commit.
-  **Private**
You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.

 Add a README fileThis is where you can write a long description for your project. [Learn more.](#) **Add .gitignore**Choose which files not to track from a list of templates. [Learn more.](#) **Choose a license**A license tells others what they can and can't do with your code. [Learn more.](#)This will set  **main** as the default branch. Change the default name in your [settings](#).

Here is how the repository should look:

Click on the repository name to go back to its main directory. 

 **boyan-kar / my-first-repository**  

 [Code](#)  [Issues](#)  [Pull requests](#)  [Actions](#)  [Projects](#)  [Security](#)  [Insights](#)  [Settings](#)

 [main](#)  [1 branch](#)  [0 tags](#)  [Go to file](#)  [Add file](#)  [Code](#)

boyan-kar Initial commit	691a5b4 now	1 commit
 .gitignore	Initial commit	
 README.md	Initial commit	now

README.md GitHub automatically shows the README.md file of the current directory.  View your commit history here.

my-first-repository

You can directly edit your README.md file on Github by clicking on the file and then selecting Edit this file.

The screenshot shows a GitHub repository named 'my-first-repository'. The README.md file is displayed. At the top right of the file content area, there is a button labeled 'Edit this file' with a pencil icon. This button is circled in red. Below the file content, there are statistics: 1 lines (1 sloc), 21 Bytes, and buttons for Raw, Blame, and a browser icon.

Configuration management with GIT:

Using GIT for Configuration Management

Step 1: Initialization on a new deployment

Step 2: Updating any configuration, including the default configuration: Step 3:

Resolving Git merge conflicts

Step 4: Identifying the occurrence of a merge conflict:

Step 5: Examining Conflicts

Step 6: Examining differences between your current version and the previous upstream version

- The previous "upstream" version on the heard an abranch. You
current version on the site branch.

For a new "upstream" version on the heard an abranch.

Step 7: Using stage markers to view clean versions of files (without conflict markers) Step 8:

Resolving the conflict

There are two approaches to resolving the conflict:

1. Edit the merged file containing the conflict markers, keeping the changes you want to preserve and removing the conflict markers and any changes you want to discard.

2. Take the new upstream version of the file and re-apply any changes you would like to keep from your current version.

Step9: Resolving the conflict-editing the file containing the conflict markers

Step10: Resolving the conflict-re-applying your changes to new upstream version

Step11: Completing the merge procedure Step

p12: Recovering from Errors

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.19043.1766]
(c) Microsoft Corporation. All rights reserved.

C:\Users\shashank>cd
C:\Users\shashank

C:\Users\shashank>d:
D:>>cd pr

D:\Pr>git status
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean

D:\Pr>java Demo
Hello World today Software lab

D:\Pr>git add .
'git' is not recognized as an internal or external command,
operable program or batch file.

D:\Pr>git add .
Changes to be committed:
```

```
C:\WINDOWS\system32\cmd.exe
Changes to be committed:
(use "git restore --staged <file>..." to unstage)
    modified:   Demo.java

D:\Pr>git commit -m"added today software lab B1 batch"
[master e472ac1] added today software lab B1 batch
 1 file changed, 1 insertion(+), 1 deletion(-)

D:\Pr>git push -u origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 319 bytes | 319.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/savitrijambagi/HelloWorld.git
  5ae9b39..e472ac1  master -> master
branch 'master' set up to track 'origin/master'.

D:\Pr>javac Demo.java
D:\Pr>java Demo
Hello World today Software lab B1 batch

D:\Pr>
```

WEEK10

1. Install and configure Jenkins

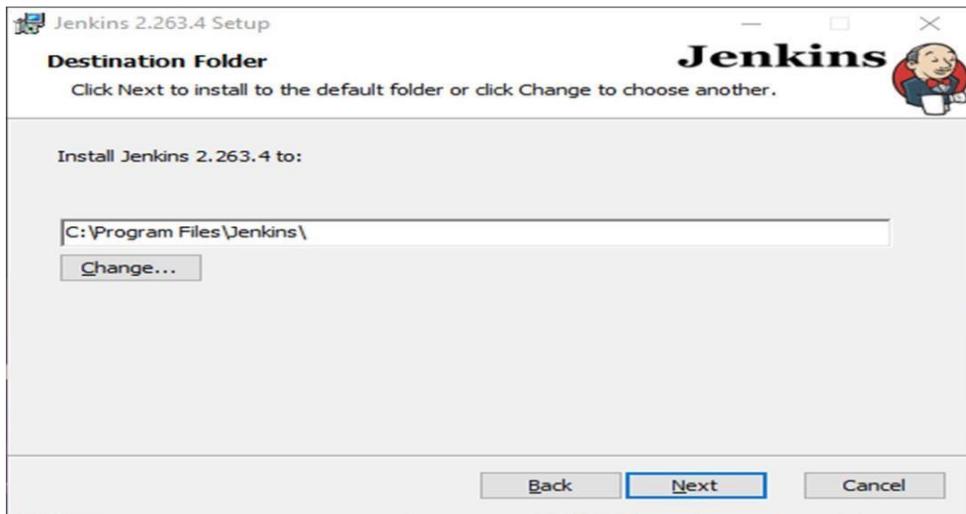
Step1: Setup wizard

On opening the Windows Installer, an **Installation Setup Wizard** appears. Click **Next** on the Setup Wizard to start your installation.



Step2: Select destination folder

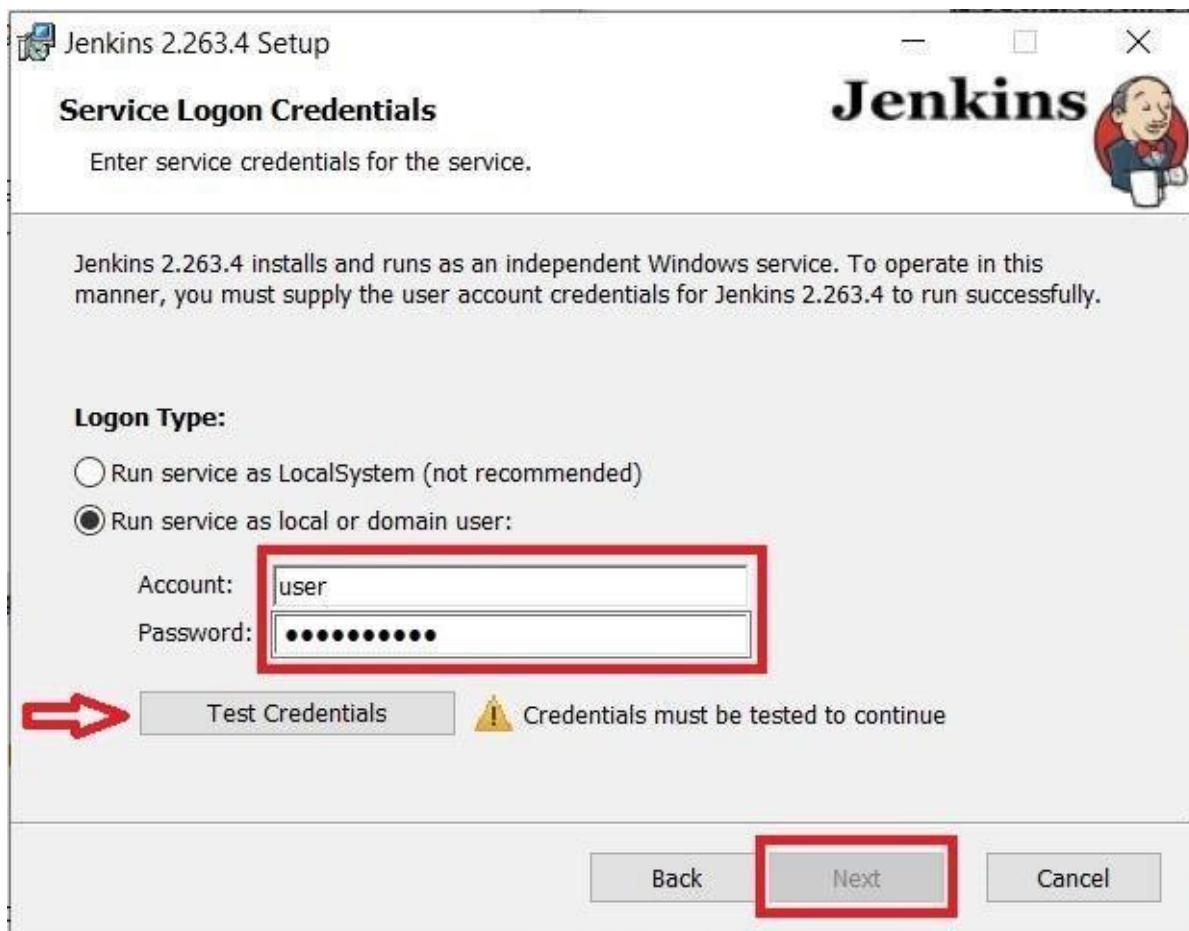
Select the destination folder to store your Jenkins Installation and click **Next** to continue.



Step3:Service logon credentials

When Installing Jenkins, it is recommended to install and run Jenkins as an independent windows service using a local or domain user as it is much safer than running Jenkins using **LocalSystem (Windows equivalent of root)** which will grant Jenkins full access to your machine and services.

To run Jenkins service using a **local or domain user**, specify the domain user name and password with which you want to run Jenkins, click on **Test Credential** to test your domain credentials and click on **Next**.



If you get **InvalidLogonError** pop-up while trying to test your credentials, steps explained here to resolve it.

Step4:Port selection

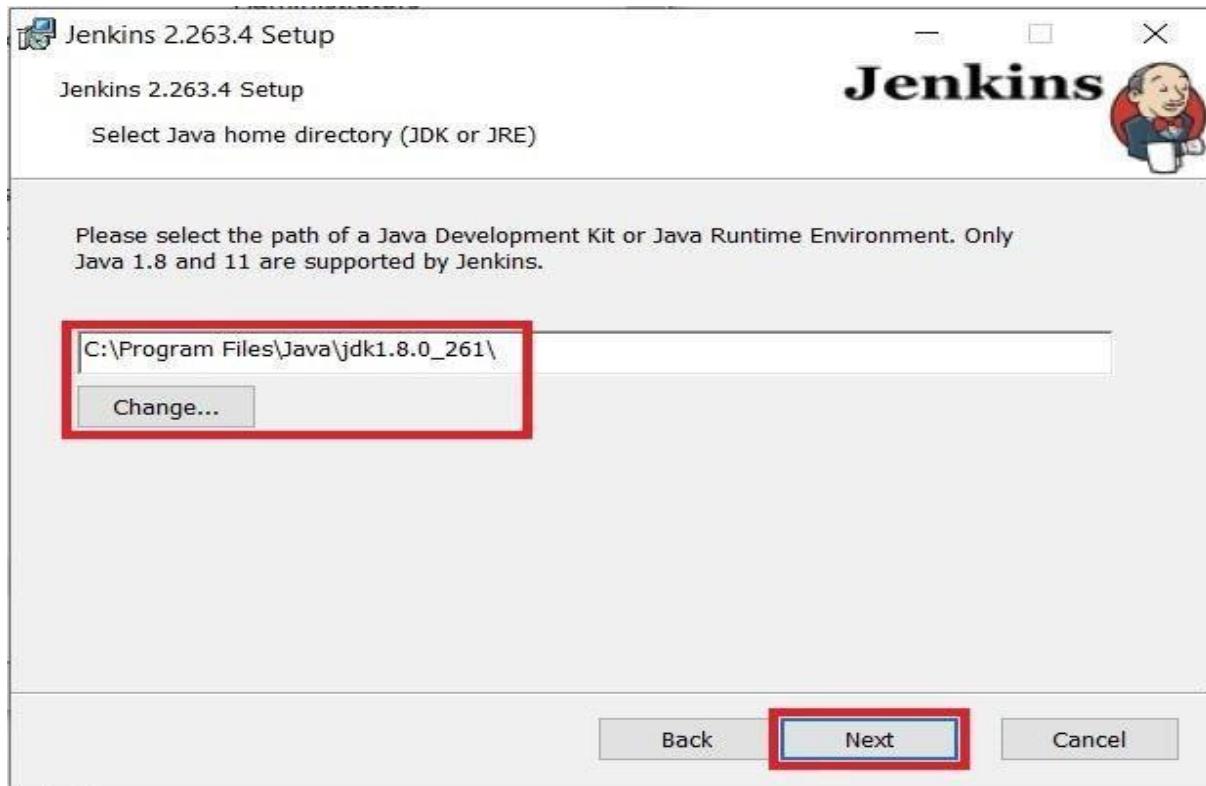
Specify the port on which Jenkins will be running, **Test Port** button to validate whether the specified port is free on your machine or not. Consequently, if the port is free, it will show a green tick mark as shown below, then click on **Next**.



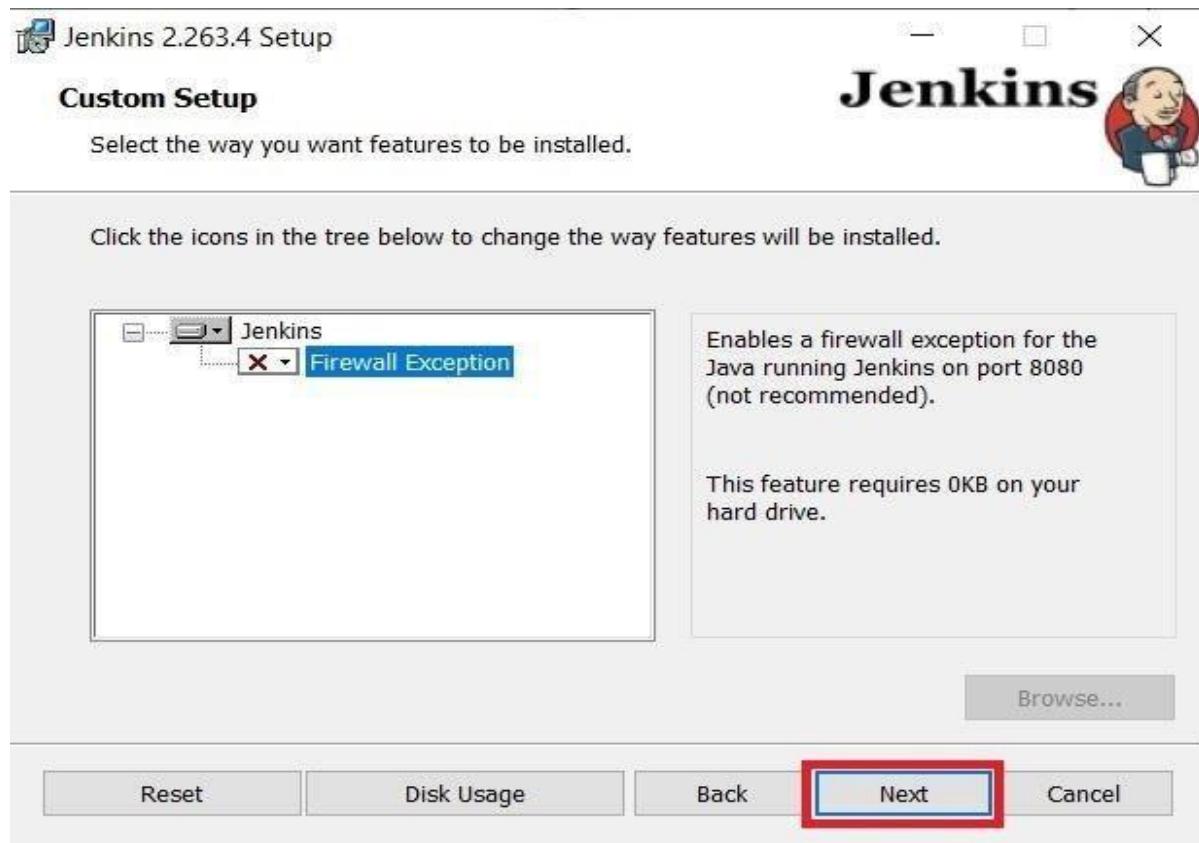
Step5:SelectJava home directory

The installation process checks for Java on your machine and prefills the dialog with the Java home directory. If the needed Java version is not installed on your machine, you will be prompted to install it.

Once your Java home directory has been selected, click on **Next** to continue.

**Step6: Custom setup**

Select other services that need to be installed with Jenkins and click on Next.



Step7:InstallJenkins

Click on the **Install** button to start the installation of Jenkins.



Additionally, clicking on the **Install** button will show the progress bar of installation, as shown below:



Step8:FinishJenkinsinstallation

Once the installation completes, click on **Finish** to complete the installation.

Jenkins will be installed as a **Windows Service**. You can validate this by browsing the **services** section, as shown below:

Seetheupgrade stepswhenyouupgradetoanewrelease.

Post-installation setup wizard

Afterdownloading,installingandrunningJenkins,thepost-installation setupwizardbegins.

Thissetupwizardtakesyouthroughafewquick"one-off"stepstounlockJenkins,customizeit with plugins and create the first administrator user through which you can continueaccessingJenkins.

Unlocking Jenkins

WhenyoufirstaccessanewJenkinsinstance,youareaskedtounlockitusinganautomatically-generatedpassword.

Step1

Browsetohttp://localhost:8080(orwhicheverportyouconfiguredforJenkinswheninstallingit)and wait untilthe**Unlock Jenkins** pageappears.

Getting Started

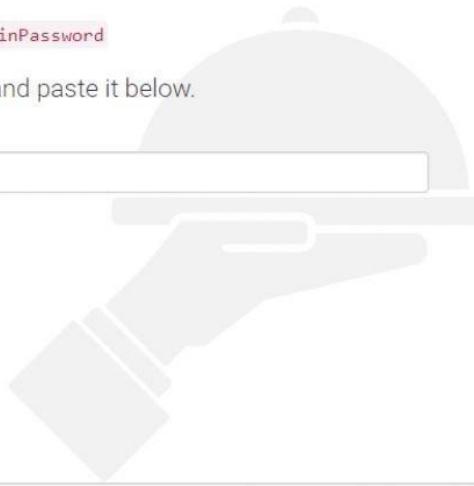
Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

C:\Program Files (x86)\Jenkins\secrets\initialAdminPassword

Please copy the password from either location and paste it below.

Administrator password



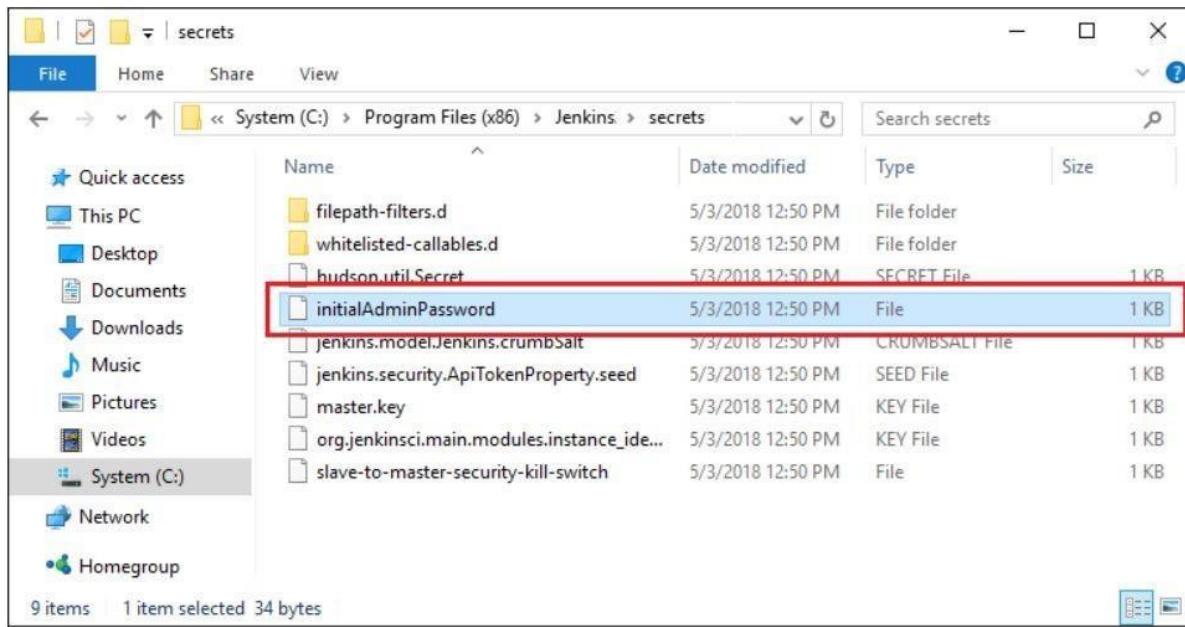
Continue

Step2

The initial Administrator password should be found under the Jenkins installation path (set at Step2 in Jenkins Installation).

For default installation location to C:\Program Files\Jenkins, a file called **initialAdminPassword** can be found under C:\Program Files\Jenkins\secrets.

However, If a custom path for Jenkins installation was selected, then you should check that location for **initial AdminPassword** file.

**Step3**

Open the highlighted file and copy the content of the **initialAdminPassword** file.

**Step4**

On the **Unlock Jenkins** page, paste this password into the **Administrator password** field and click **Continue**.

Notes:

- You can also access Jenkins logs in the **jenkins.err.log** file in your Jenkins directory specified during the installation.
- The Jenkins log file is another location (in the Jenkins home directory) where the initial password can also be obtained.

The screenshot shows a Notepad window with the following content:

```
*****
Jenkins initial setup is required. An admin user has been created and a password generated.
Please use the following password to proceed to installation:
c24a815ef6064a1189eb2e733bcff075

This may also be found at: c:\Windows\system32\config\systemprofile\AppData\Local\Jenkins\.jenkins\secrets\init

*****
2021-02-11 19:43:53.064+0000 [id=57] INFO h.m.DownloadService$Downloadable#load: Obtained the updated dat
2021-02-11 19:43:53.065+0000 [id=57] INFO hudson.util.Retriger#start: Performed the action check updates s
2021-02-11 19:43:53.106+0000 [id=57] INFO hudson.model.AsyncPeriodicWork$lambda$doRun$0: Finished Downloa
2021-02-11 19:44:03.688+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: Completed initializatio
2021-02-11 19:44:03.799+0000 [id=22] INFO hudson.WebAppMain$3#run: Jenkins is fully up and running
```

This password must be entered in the setup wizard on new Jenkins installations before you can access Jenkins's main UI. This password also serves as the default administrator account's password (with username "admin") if you happen to skip the subsequent user-creation step in the setup wizard.

Customizing Jenkins with plugins

After [unlocking Jenkins](#), the [Customize Jenkins](#) page appears. Here you can install any number of useful plugins as part of your initial setup.

Click one of the two options shown:

- **Install suggested plugins** - to install the recommended set of plugins, which are based on most common use cases.
- **Select plugins to install** - to choose which set of plugins to initially install. When you

first

If you are not sure what plugins you need, choose **Install suggested plugin** to install (or remove) additional Jenkins plugins at a later point in time via the [Jenkins > Manage Plugins](#) page in Jenkins.

The setup wizard shows the progression of Jenkins being configured and your chosen set of access the plugin selection page, the suggested plugins are selected by default.

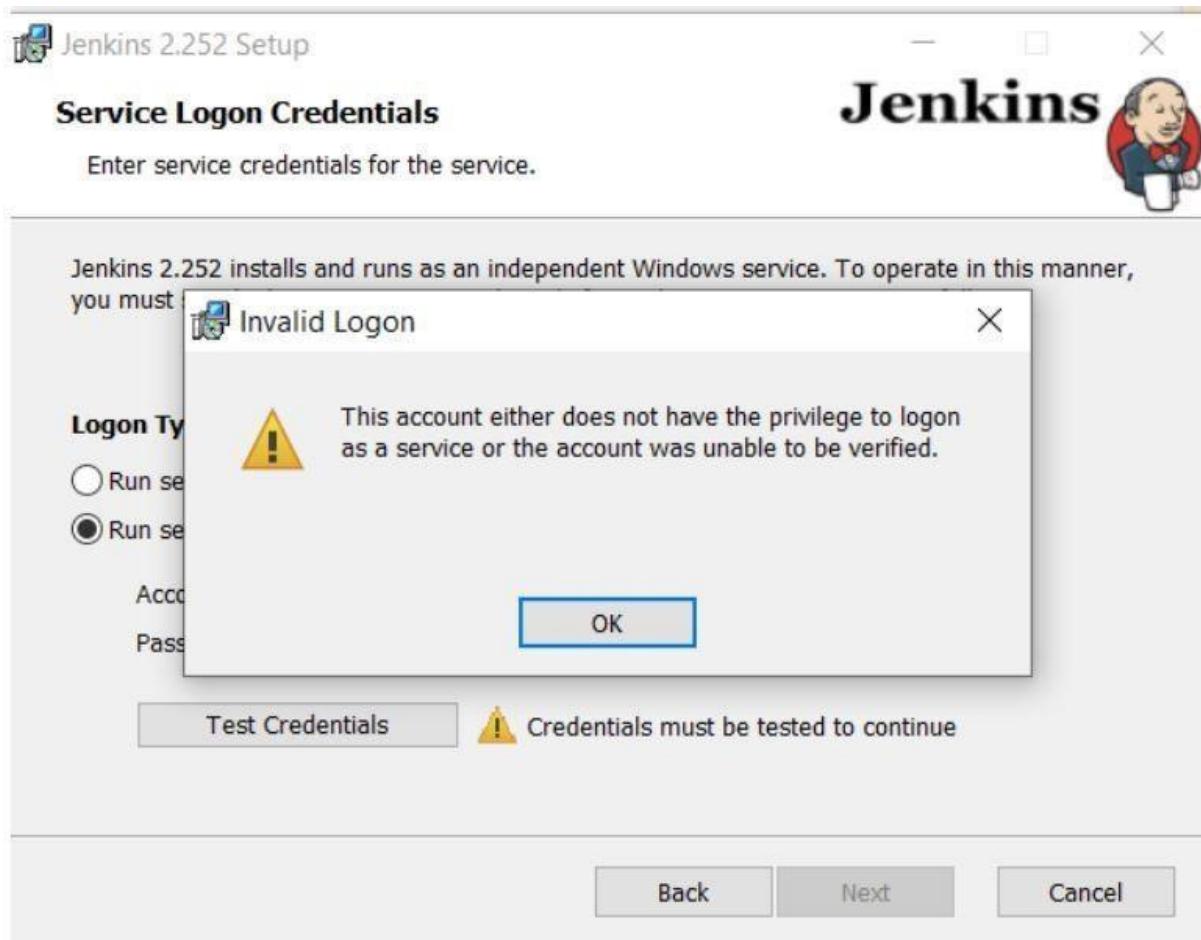
. You can [Manage](#)

Jenkins plugins being installed. This process may take a few minutes. Creating the first administrator user

Finally, after customizing Jenkins with plugins, Jenkins asks you to create your first administrator user.

1. When the **CreateFirstAdminUser** page appears, specify the details for your administrator user in the respective fields and click **Save and Finish**.
2. When the **Jenkins is ready** page appears, click **Start using Jenkins**. **Notes:**
 - o This page may indicate **Jenkins is almost ready!** instead and if so, click **Restart**.
 - o If the page does not automatically refresh after a minute, use your web browser to refresh the page manually.
3. If required, log in to Jenkins with the credentials of the user you just created and you are ready to start using Jenkins! Troubleshooting Windows installation

Invalid service logon credentials



When installing a service to run under a domain user account, the account must have the right to log on as a service. This logon permission applies strictly to the local computer and must be granted in the Local Security Policy.

Perform the following steps below to edit the Local Security Policy of the computer you want to define the ‘log on as a service’ permission:

1. Log on to the computer with administrative privileges.
2. Open the **Administrative Tools** and open the **Local Security Policy**
3. Expand **Local Policy** and click on **User Rights Assignment**
4. In the right pane, right-click **Log on as a service** and select properties.
5. Click on the **Add User or Group...** button to add the new user.
6. In the **Select Users or Groups** dialogue, find the user you wish to enter and click **OK**
7. Click **OK** in the **Log on as a service Properties** to save changes. After completing the steps above, try logging in again with the added user.

2. Create a container image for Helloworld project

Create a container image for Hello world project And Setup build for container image using Jenkins (Hello world application)

How to Create a New Build Job in Jenkins

The freestyle build job is a highly flexible and easy-to-use option. You can use it for any type of project; it is easy to set up, and many of its options appear in other build jobs. Below is a step-by-step process to create a job in Jenkins.

Step1) Log into Jenkins

To create a Jenkins freestyle job, log on to your Jenkins dashboard by visiting your Jenkins installation path. Usually, it will be hosted on localhost at <http://localhost:8080>. If you have installed Jenkins in another path, use the appropriate URL to access your dashboard as shown in the below Jenkins job creation example.

Step2) Create New Item

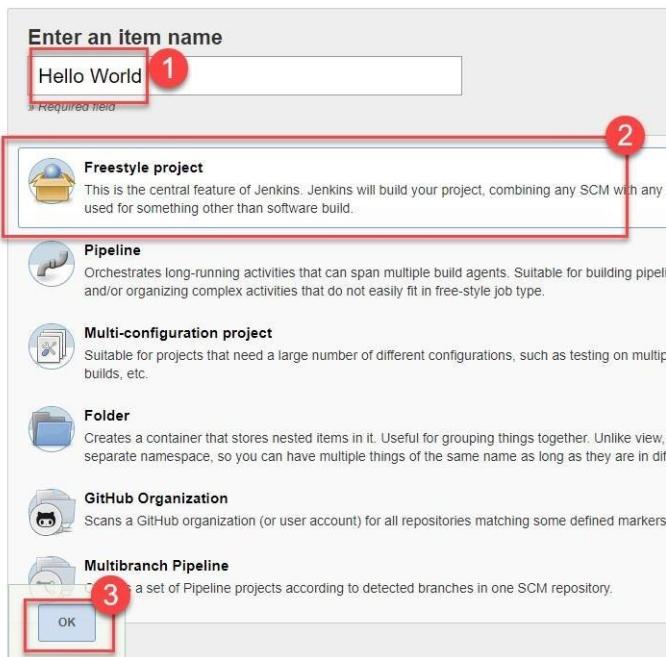
Click on “New Item” at the top left-hand side of your dashboard.



Step3)EnterItemdetails

In the next screen,

1. Enter the name of the item you want to create. We shall use the "Hello world" for this demo.
2. Select Freestyle project
3. Click Okay



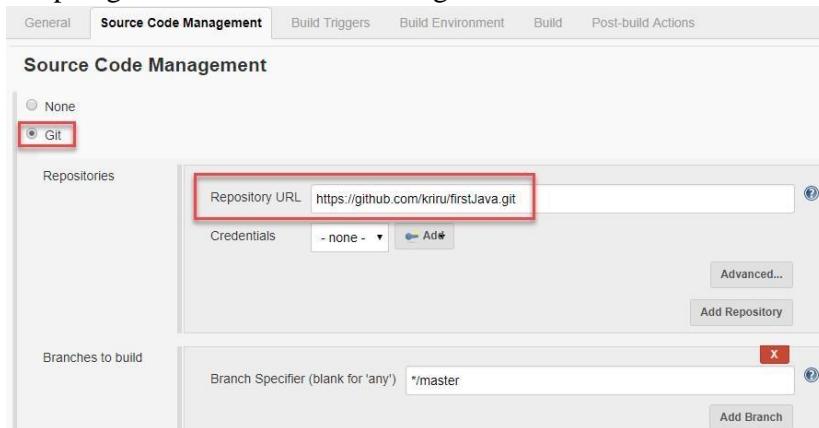
Step4)EnterProjectdetails

Enter the details of the project you want to test.



Step5)EnterrepositoryURL

Under Source Code Management, Enter your repository URL. We have a test repository located at <https://github.com/kiriru/firstJava.git>



It is also possible for you to use a local repository.

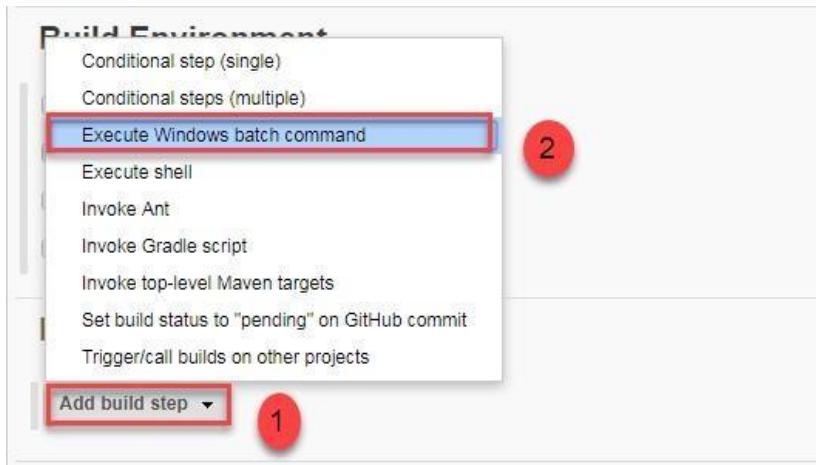
If your GitHub repository is private, Jenkins will first validate your login credentials with GitHub and only then pull the source code from your GitHub repository.

Step6)Tweakthesettings

Now that you have provided all the details, it's time to build the code. Tweak the settings under the **build** section to build the code at the time you want. You can even schedule the build to happen periodically, at set times.

Under build,

1. Click on “**Add build step**”
2. Click on “**Execute Windows batch command**” and add the commands you want to execute during the build process.



Here, I have added the java commands to compile the java code.

I have added the following windows commands:

`javac`

`HelloWorld.java`

`java HelloWorld`



Step7) Save the project

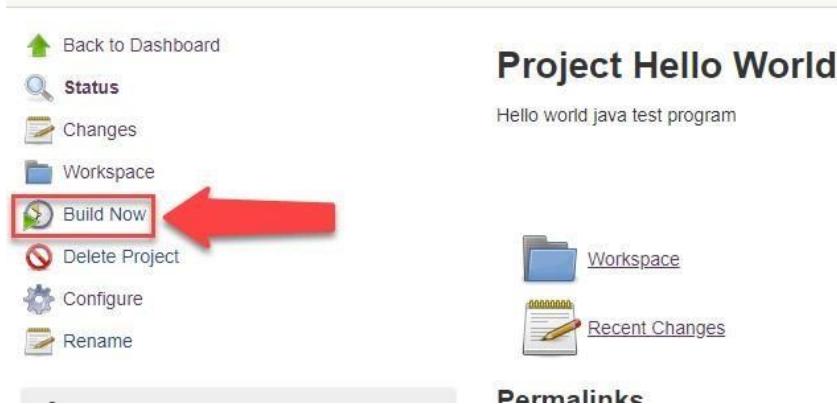
When you have entered all the data,

1. Click **Apply**.

Save the project.

Step8) Build Sourcecode

Now, in the main screen, Click the **Build Now** button on the left-hand side to build the source code.



Step9)Check thestatus

Afterclickingon **Buildnow**, youcanseethe statusofthebuild yourununder **BuildHistory**.

Build History		trend =
	#1	Sep 3, 2018 5:45 PM
RSS for all RSS for failures		

Step10)See theconsoleoutput

Click on the **build number** and then Click on **console output** to see the status of the buildyou run. It should show you a success message, provided you have followed the setupproperlyasshown in thebelowJenkinscreate newjobexample.

The screenshot shows the Jenkins interface for a project named "Hello World". The "Console Output" link in the left sidebar is highlighted with a red box and a green arrow pointing to it from the bottom left. The main content area displays the build logs:

```

Started by user The_Guru99
Building in workspace C:\Program Files (x86)\Jenkins\workspace\Hello World
Cloning the remote Git repository
Cloning repository https://github.com/kriru/firstJava.git
> git.exe init C:\Program Files (x86)\Jenkins\workspace\Hello World # timeout=10
Fetching upstream changes from https://github.com/kriru/firstJava.git
> git.exe --version # timeout=10
> git.exe fetch --tags --progress https://github.com/kriru/firstJava.git +refs
> git.exe config remote.origin.url https://github.com/kriru/firstJava.git # t
> git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/
> git.exe config remote.origin.url https://github.com/kriru/firstJava.git # t
Fetching upstream changes from https://github.com/kriru/firstJava.git
> git.exe fetch --tags --progress https://github.com/kriru/firstJava.git +refs
> git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10
> git.exe rev-parse "refs/remotes/origin/origin/master^{commit}" # timeout=10
> git.exe rev-parse "origin/master^{commit}" # timeout=10

C:\Program Files (x86)\Jenkins\workspace>Hello World>javac HelloWorld.java

C:\Program Files (x86)\Jenkins\workspace>Hello World>java HelloWorld
Hello World

Finished: SUCCESS

```

In sum, we have executed a HelloWorld program hosted on GitHub. Jenkins pulls the code from the remote repository and builds continuously at a frequency you define.

WEEK12

2. Use SonarQube to capture code quality metrics

➤ What is SonarQube?

SonarQube is an open-source platform developed by SonarSource for continuous inspection of code quality. Sonar does static code analysis, which provides a detailed report of bugs, code smells, vulnerabilities, and code duplicates.

➤ Features:

- Can perform automatic reviews with static code analysis for many problems that affect code quality.
- Helps maintain quality and reliability of code projects over its life-span using advanced quality test metrics and graphs.
- Integrates seamlessly with other tools like Jenkins, Atlassian, MSBuild, etc, which helps productive workflow.
- Supports most popular programming languages like Java, Python, JavaScript, etc (along with framework support).

➤ ADVANTAGES FOR SONARQUBE TOOL

1. Architecture and Design
2. Unit tests
3. Duplicated code
4. Potential bugs
5. Complex code
6. Coding standards
7. Comments

➤ SonarQube For Metrics

- Complexity.
- Duplications.
- Issues.
- Maintainability.
- Reliability.
- Security.
- Size.

- Tests.

➤ **HowtoUseSonarQubeToolForCode Quality:**

Step1:DownloadandUnzipSonarQubeSt

ep 2: Run the SonarQube local

serverStep3:Start

a newSonarQubeproject

Step4:SetupProjectpropertiesandSonarScannerStep5:

View your analysis report on Sonar Dashboard

➤ **What is SonarQube and why it is used?**

SonarQube (formerly Sonar) is an open-source platform developed by SonarSource for continuous inspection of code quality to perform automatic reviews with static analysis of code to detect bugs, code smells on 17 programming languages.

➤ **INSTALLATION PROCESS FOR SONARQUBE**

Step1: In the browser search download sonar qube 8.9 Its Step

2: Click download sonar qube

Step 3: Scroll down and click on the sonar qube 8.9 (community edition)
Step4: In the computer file open sonar qube application

Step5: In the solar qube application open bin

Step6: IN the bin application select window-x86-64, select startsonar.bat

Step7: Open startsonar.bat copy the application in CP (command prompt) copied application press enter

Step8: END

WEEK13

1. OrganizeRoleplaytounderstandtherolesandresponsibilitiesofQAandQCteam.

RolesandResponsibilitiesofQualityAssurance(QA)

StrategicrolesandresponsibilitiesofaQualityAssuranceManager

Inadditiontotheirday-to-daydutiesasqualityassurancemanagers,theymaybeaskedtoassumetherestrategicpositionssuch as:

- Managing the overall performance of the quality department;
- Ensuring compliance with government regulations;
- Support the development of new products;
- Developing policies for the quality management system;
- Providing technical support to customers;
- Serving on committees responsible for developing and implementing strategies;
- Evaluating the effectiveness of existing programs;
- Monitoring changes in market conditions;
- Preparing reports about current trends and future plans;
- Conducting research into emerging technologies;
- Working with outside consultants; and
- Help develop marketing strategies designed to increase sales.
- Other tasks assigned by senior

executives. TypicalSkills of a Quality Assurance

Manager

- Thefollowingskillsmaybefoundhelpfulinthisposition:
- Communication: Theabilitytocommunicateeffectivelybothorallyandinwriting.
- Organization: Agoodsenseoforderlinessandtimemanagement.
- Problem-solving—Anaptitudeforanalyzingsituationsandformulatingssolutions.
- Teamwork—Abilitytogetalongwellwithothers.
- Leadership—Leadershipqualitiessuchasinitiative,self-confidence,assertiveness,decisiveness, anddiplomacy.
- Creativity – Creative thinking abilities
includingimagination,
originality,resourcefulness,flexibility,adaptability, andinventiveness.
- Judgment – Judgmental capabilities include discrimination, discernment, foresight, objectivity, andsound judgment.
- AnalyticalThinking—Theabilitytothinklogicallyandcriticallyaboutissuesandsolveproblems.
- Inquiry—Curiosityandinterestinlearningnewthings.
- Decision-Making—Decision-making skillsthatinvolvechoosingalternativesandevaluatingtheirrelativemerits.
- Planning—Planning skillsthatenableonetoanticipatefutureneedsanddeviseappropriatecoursesof action.
- TimeManagement—Timemanagementskillsthatallowyoutoorganizeyouractivitiesefficientlyand

keep on schedule.

- SelfControl—Self-control referstothe capacitytodelaygratificationandresistimpulses.
- Adaptability—Adaptabilityinvolvestheabilitytoadjustbehaviourtosuitchangingcircumstances.
- Attention To Detail – Attention to detail can mean paying close attention to small details while performing routinetasks.
- TechnicalSkills—Technicalskillsandexperiencerelatedtotheindustry.

Roles and Responsibilities of Quality

Control(QC)ResponsibilitiesforQualityControlInsp

ector

- Inspectproductstoensurethattheymeetqualitystandards
- Createtestsforqualitycontrolofproducts
- Disassembleproductpartstoispectthemindividually
- Monitorproductionoperationstoensureconformancecompliantwithspecifications
- Directassemblyadjustmentstoensureoperationsreflectqualitystandards
- Ensureproductsmeetcustomerexpectationsbasedoncompanyobjectives
- Communicatetheresultsofinpectionsandputforwardcorrectivesuggestions
- Writereportstodocumentdeficienciesanderrorsofproducts
- Carryoutqualityassessmentmeasuresofalltheproductsreadytobeshippedandincomingrawmaterial
- Takea thoroughlookattheplans,specifications, andblueprintstounderstandtheproductrequirements
- Rejectalltheincomingrawmaterialsfailtomeetqualityexpectationsandreporttheissuetothecorrespondingdepartmentat the earliest
- Resolvingquality-relatedissuesadheringtodeadlines
- Providingtrainingtothequalityassuranceteam
- Designanefficientdesignprotocolwhichcanbeusedacrossalldomain
- Preparedocumentationoftheinspectionprocess,whichincludesdetailedreportsandperformance
- Recommendimprovementmeasurestothe productionprocesses to ensure quality control standards are met
- Guidetheproductionteamaboutthequalitycontrolissues to enhance the quality of the product
- Monitorcustomersatisfactionlevels
- Monitorthe productionphaseatvariouslevels

2.Audittheartifactsproducedinprevioussessions

Auditing session activity

In addition to providing information about current and completed sessions in the Systems Manager console, Session Manager provides you with the ability to audit session activity in your AWS account using AWS CloudTrail.

CloudTrail captures session API calls through the Systems Manager console, the AWS Command Line Interface (AWS CLI), and the Systems Manager SDK. You can view the information on the CloudTrail console or store it in a specified Amazon Simple Storage Service (Amazon S3) bucket. One Amazon S3 bucket is used for all Cloud Trail logs for your account. For more information, see [Logging AWS Systems Manager API calls with AWS CloudTrail](#).

Monitoring session activity using Amazon EventBridge (console)

With EventBridge, you can set up rules to detect when changes happen to AWS resources. You can create a rule to detect when a user in your organization starts or ends a session, and then, for example, receive a notification through Amazon SNS about the event.

EventBridge support for Session Manager relies on records of API operations that were recorded by CloudTrail. (You can use CloudTrail integration with EventBridge to respond to most AWS Systems Manager events.) Actions that take place within a session, such as an exit command, that don't make an API call aren't detected by EventBridge.

The following steps outline how to initiate notifications through Amazon Simple Notification Service (Amazon SNS) when a Session Manager API event occurs, such as **StartSession**.

To monitor session activity using Amazon EventBridge (console)

1. Create an Amazon SNS topic to use for sending notifications when the Session Manager event occurs that you want to track.
For more information, see [Create a Topic](#) in the *Amazon Simple Notification Service Developer Guide*.
2. Create an EventBridge rule to invoke the Amazon SNS target for the type of Session Manager event you want to track.

For information about how to create the rule, see [Creating an EventBridge Rule That Triggers on an Event from an AWS Resource](#) in the *Amazon EventBridge User Guide*.

As you follow the steps to create the rule, make the following selections:

- For **Service Name**, choose **Systems Manager**.
- For **Event Type**, choose **AWS API Call through CloudTrail**.
- Choose **Specific operation(s)**, and then enter the Session Manager command or commands (one at a time) you want to receive notifications for. You can choose **StartSession**, **ResumeSession**, and **TerminateSession**. (EventBridge doesn't support **Get***, **List***, and **Describe*** commands.)
- For **Targets**, choose **SNS topic**. For **Topic**, choose the name of the Amazon SNS topic you created in Step 1.