



*Grunt*

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## About the Tutorial

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Grunt is a JavaScript Task Runner which can be used as a command line tool for JavaScript objects. It is a task manager written on top of NodeJS.

This tutorial explains how to use GruntJS to automate the build and deployment process in simple and easy steps.

## Audience

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This tutorial has been prepared for beginners to help them understand the basic functionality of GruntJS. After completing this tutorial, you should find yourself at a moderate level of expertise in using GruntJS from where you may take yourself to next levels.

## Prerequisites

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For this tutorial, it is assumed that the readers have prior knowledge of basic software development using Java or any other programming language. It will be an added advantage if you have some exposure to the software build and deployment process.

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# 1. GRUNT – OVERVIEW

## What is Grunt?

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Grunt is a JavaScript Task Runner which can be used as a command line tool for JavaScript objects. It is a task manager written on top of NodeJS.

## Why Use Grunt?

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- Grunt can perform repetitive tasks very easily, such as compilation, unit testing, minifying files, running tests, etc.
- Grunt includes built-in tasks that extend the functionality of your plugins and scripts.
- The ecosystem of Grunt is huge; you can automate anything with very less effort.

## History

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The first lines of source code were added to GruntJS in 2011. The Grunt v0.4 was released on February 18, 2013. The Grunt v0.4.5 was released on May 12, 2014. The stable version of Grunt is 1.0.0 rc1 which was released on February 11, 2016.

## Advantages

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- Using Grunt, you can perform minification, compilation, and testing of files easily.
- Grunt unifies the workflows of web developers.
- You can easily work with a new codebase using Grunt because it contains less infrastructure.
- It speeds up the development workflow and enhances the performance of projects.

## Disadvantages

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- Whenever **npm** packages are updated, you need to wait until the author of the Grunt updates it.
- Every task is designed to do a specified work. If you want to extend a specified task, then you need to use some tricks to get the work done.
- Grunt includes a large number of configuration parameters for individual plugins. Usually, Grunt configuration files are longer in length.

## 2. GRUNT – FEATURES

Grunt is a JavaScript based task runner which means it can automate repetitive tasks in a workflow and it can be used as a command line tool for JavaScript objects.

Some of the most prominent features of GruntJS are listed below:

- Grunt makes the workflow as easy as writing a setup file.
- You can automate repetitive tasks with minimum effort.
- Grunt is a popular task runner based on NodeJS. It is flexible and widely adopted.
- It has a straightforward approach which includes tasks in JS and config in JSON.
- Grunt minifies JavaScript, CSS files, testing files, compiling CSS preprocessor files (SASS, LESS), etc.
- Grunt includes built-in tasks that extend the functionality of your plugins and scripts.
- It speeds up the development workflow and enhances the performance of projects.
- You can easily work with a new codebase using Grunt because it contains less infrastructure.
- The ecosystem of Grunt is huge; you can automate anything with very less effort.
- Grunt reduces the chance of getting errors while performing repetitive tasks.
- Grunt currently has over 4000 plugins.
- It can be used in big production sites.

# 3. GRUNT – INSTALLING

This chapter provides a step-by-step procedure of how to install Grunt on your system.

## System Requirements for Grunt

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- **Operating System** : Cross-platform
- **Browser Support** : IE (Internet Explorer 8+), Firefox, Google Chrome, Safari, Opera

## Installation of Grunt

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**Step 1:** We need NodeJs to run Grunt. To download NodeJs, open the link <https://nodejs.org/en/>, you will see a screen as shown below:



Node.js® is a JavaScript runtime built on **Chrome's V8 JavaScript engine**. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient. Node.js' package ecosystem, **npm**, is the largest ecosystem of open source libraries in the world.

### Download for Windows (x86)



Download the *Latest Features* version of the zip file.

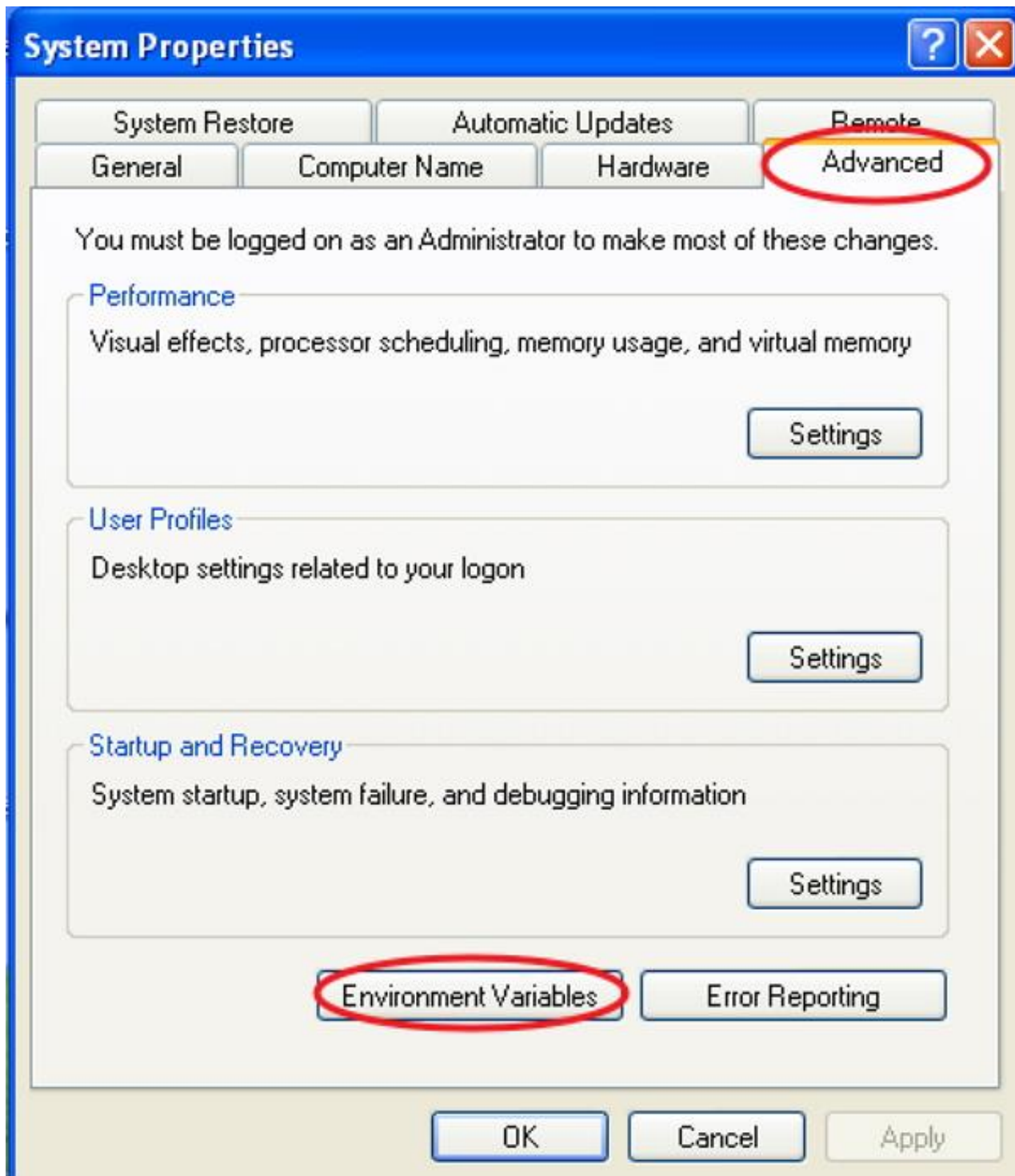
**Step 2:** Next, run the setup to install the *NodeJs* on your computer.

**Step 3:** Next, you need to set *environment variables*.

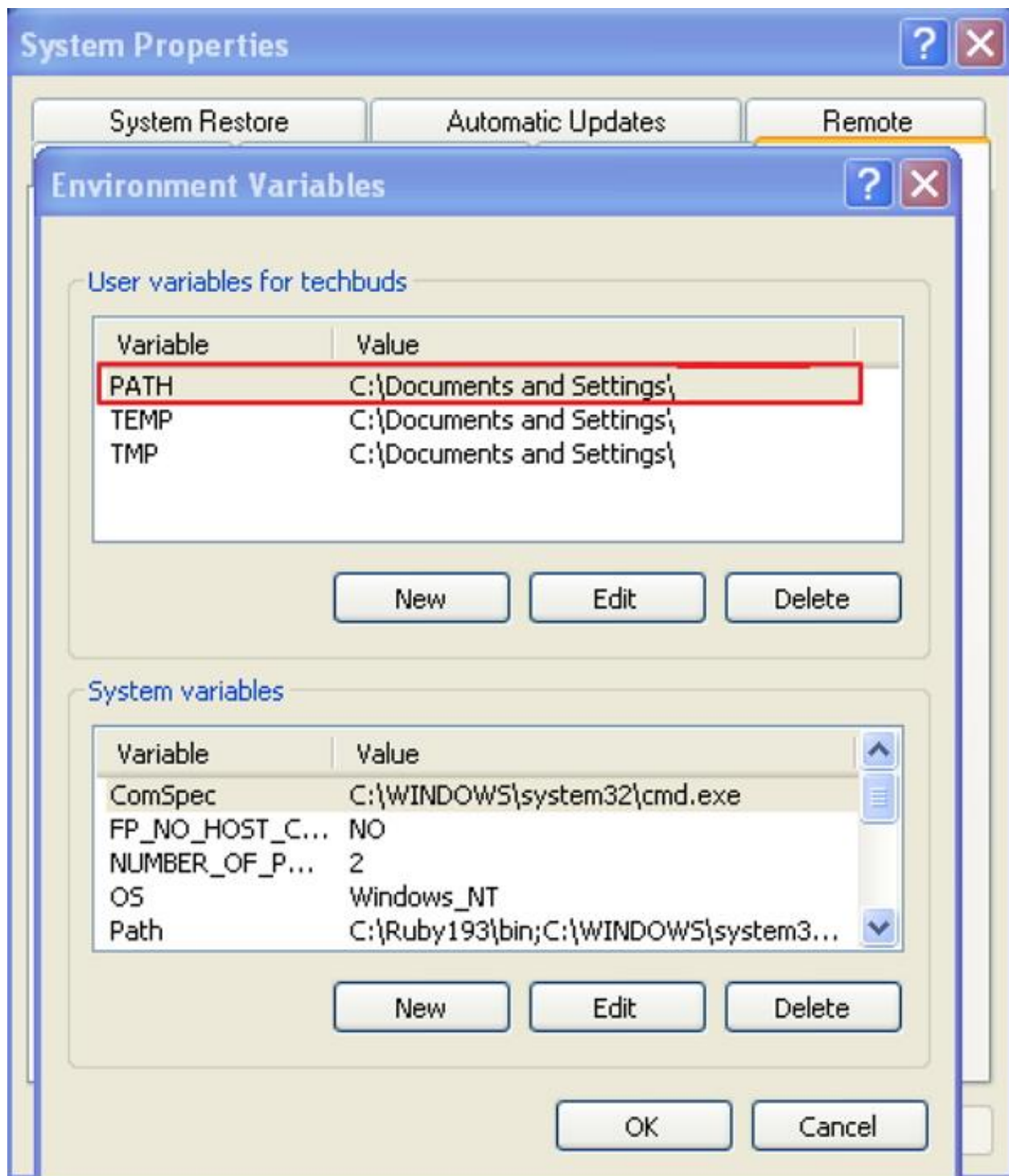
### Path User Variable

- Right click on **My Computer**.
- Select **Properties**.
- Next, select **Advanced** tab and click **Environment Variables**.

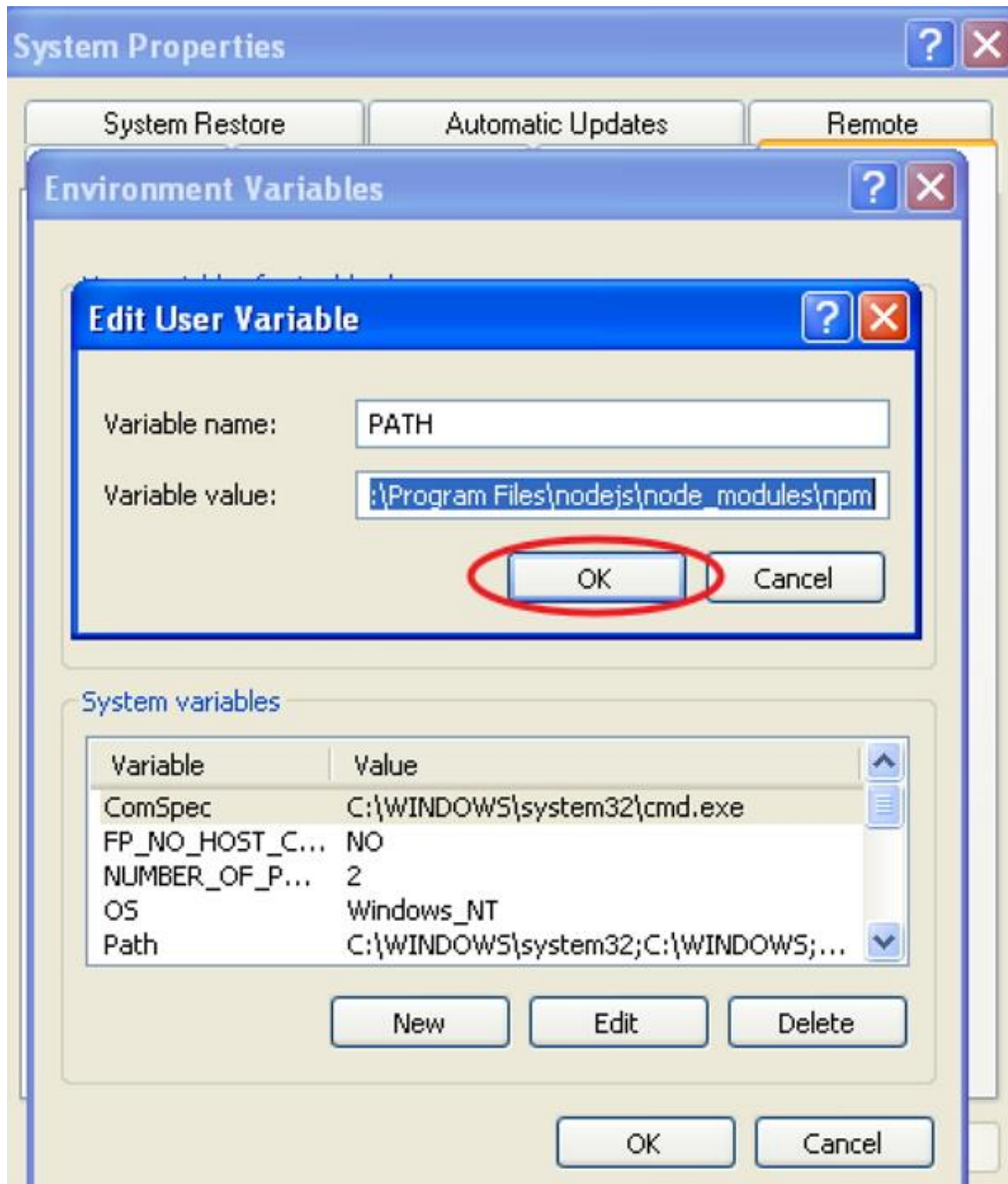




- Under *Environment Variables* window, double click on the *PATH* as shown in the screen.



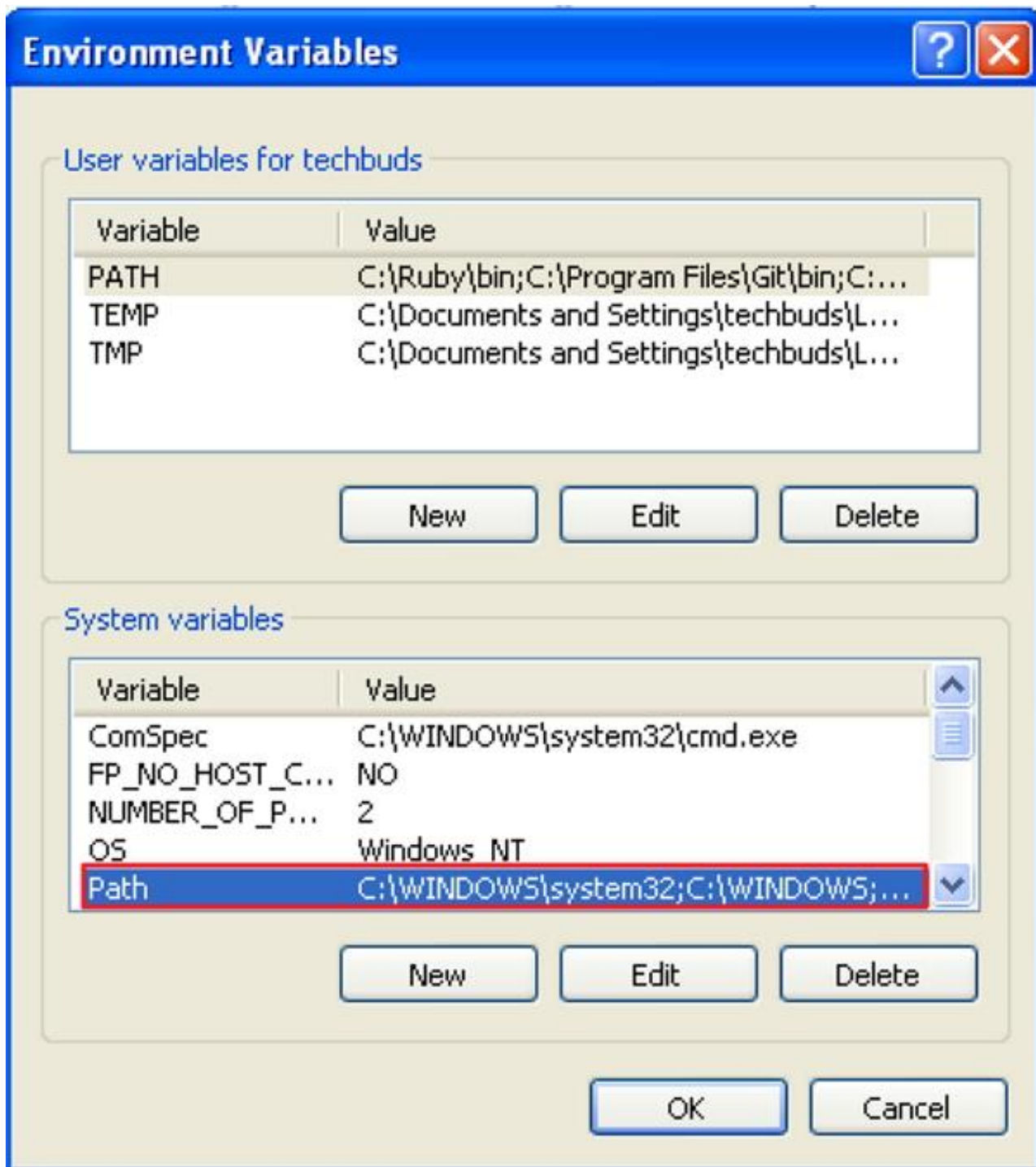
- You will get an *Edit User Variable* window as shown. Add NodeJs folder path in the *Variable Value* field as `C:\Program Files\nodejs\node_modules\npm`. If the path is set already for other files, then you need to put a semicolon(;) after that and add the NodeJs path as shown below:



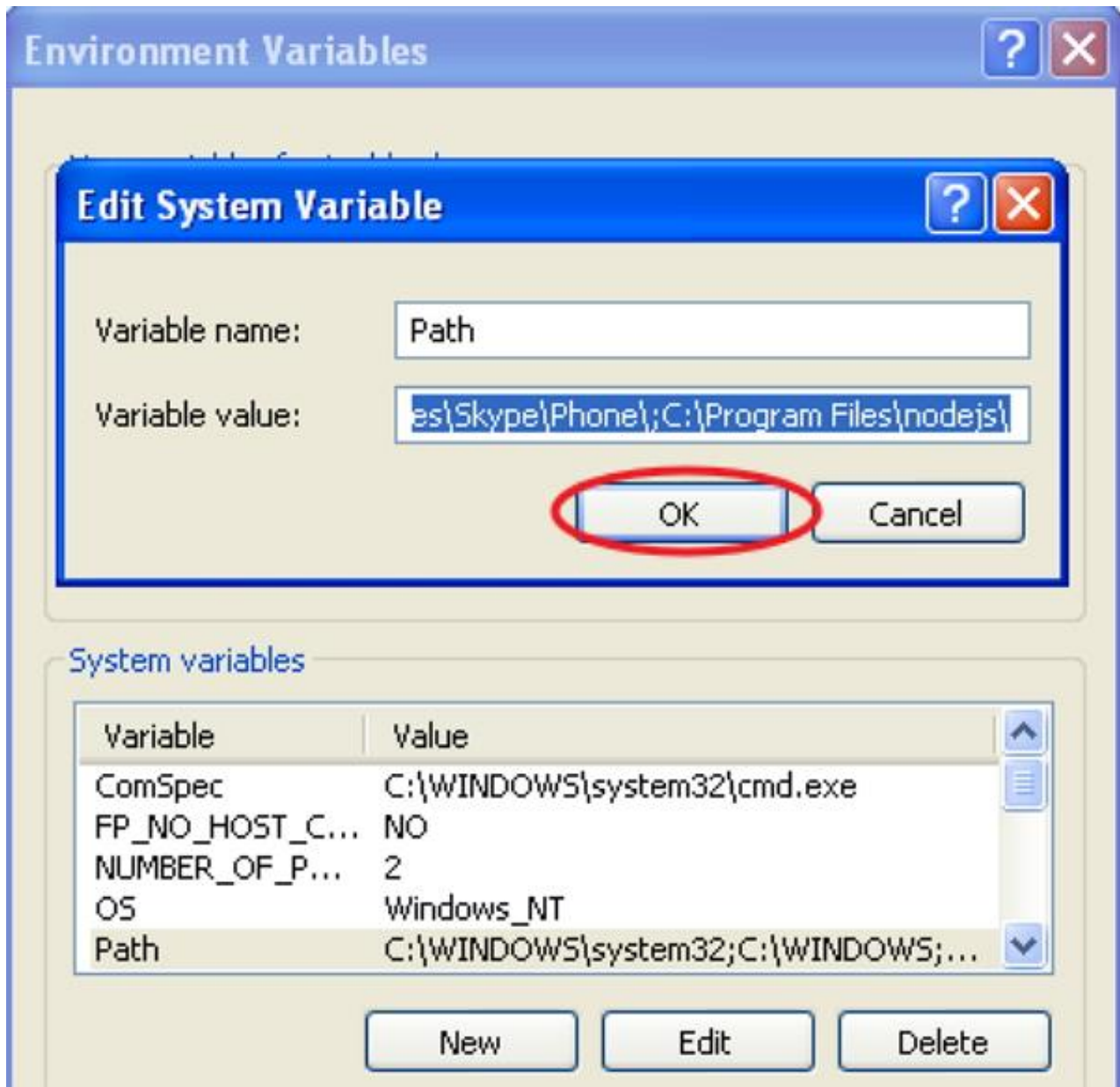
At the end, click the OK button.

## System Variable

- Under *System Variables*, double click on *Path* as shown in the following screen.



- You will get an *Edit System Variable* window as shown. Add NodeJs folder path in the *Variable Value* field as *C:\Program Files\nodejs\* and click *OK* as shown below:



**Step 4:** To install Grunt on your system, you need to install Grunt's command line interface (CLI) globally as shown below:

```
npm install -g grunt-cli
```

Running the above command will put the *grunt* command in your system path, which makes it to run from any directory.

Installing the *grunt-cli* does not install Grunt task runner. The role of the *grunt-cli* is to run the version of Grunt which has been installed next to a *Gruntfile*. It allows a machine to install multiple versions of Grunt simultaneously.

**Step 5:** Now, we shall create **configuration files** in order to run Grunt.

## package.json

The *package.json* file is placed in the root directory of the project, beside the *Gruntfile*. The *package.json* is used to correctly run each listed dependency whenever you run the command **npm install** in the same folder as *package.json*.

The basic *package.json* can be created by typing the following command in the command prompt:

```
npm init
```

The basic *package.json* file will be as shown below:

```
{
  "name": "tutorialspoint",
  "version": "0.1.0",
  "devDependencies": {
    "grunt-contrib-jshint": "~0.10.0",
    "grunt-contrib-nodeunit": "~0.4.1",
    "grunt-contrib-uglify": "~0.5.0"
  }
}
```

You can add Grunt and gruntplugins into an existing *pacakge.json* file through the following command:

```
npm install <module> --save-dev
```

In the above command, <module> represents the module to be installed locally. The above command will also add the <module> to *devDependencies* automatically.

For instance, the following command will install the latest version of *Grunt* and adds it to your *devDependencies*:

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