Shell Scripting: Começando seus scripts de aumação de tarefas

**Introdução**

Olá pessoal! Meu nome é Rafael Nercessian, e darei uma introdução sobre o que veremos na primeira parte do curso de **Shell Scripting**.

Nesse curso nós, você e eu, fomos contratados pela Multillidae para ajudar na automação de algumas tarefas internas.

Os diretores da Multillidae têm uma plataforma de vendas na qual é preciso converter algumas imagens de extensão .jpg para .png. Na primeira parte do curso temos que encontrar uma forma de converter esses arquivos para .png e salvá-los em um respectivo diretório PNG.

Após essa etapa, os diretores da Multillidae resolveram fazer a divisão dessas imagens por **área de conhecimento**. Veremos como pegar várias imagens que estão espalhadas em vários lugares e convertê-las para seu respectivo formato .png.

Recebemos algumas informações dos diretores, que alguns processos do sistema estão com uma grande quantidade de memória alocada. Como os diretores querem saber quais são esses processos devemos salvá-los em arquivos separados, indicando a **hora**, a **data** e a **locação em MB** respectiva a cada processo, para que os diretores possam ter o histórico desses processos com a maior quantidade de memória alocada.

No final, devemos ter o diretório de log com vários processos salvos, onde cada um deles contém informações de data, hora e a respectiva alocação em megabytes.

Muito bem pessoal, esse foi um resumo da primeira parte do curso de Shell Scripting. Mais tarde, nos encontraremos na segunda parte deste curso, abordando outros assuntos da Multillidae.

Nesse curso, estaremos usando o **Ubuntu** e é muito importante que vocês tenham feito o curso de [Linux](https://cursos.alura.com.br/course/linux-ubuntu-processos?preRequirementFrom=shellscripting), pois abordaremos alguns assuntos vistos nesse curso e também o curso de [Lógica de Programação](https://cursos.alura.com.br/course/logica-programacao-javascript-html?preRequirementFrom=shellscripting), para facilitar o acompanhamento deste curso.

Aguardo vocês e sejam todos muito bem-vindos!

**Para saber mais: Estrutura do curso**

O curso está estruturado com vídeos, exercícios de múltiplas escolhas e exercícios práticos. Para ter um melhor aproveitamento do curso, sugiro que o aluno primeiro assista os vídeos e **somente depois** faça os exercícios, isso porque iremos ficar alterando nossos scripts no decorrer do vídeo e os exercícios possuem os passos com os códigos necessários para implementar o que foi visto em aula.

No final de cada exercício prático, dê uma olhada na resposta, lá teremos informações de como seu código deverá ter ficado.

Caso tenha alguma dificuldade em alguma parte do curso, abra uma dúvida no fórum que iremos responder o mais rápido possível :)

**Convertendo imagem e montando script**

Nós fomos contratados pela Multillidae, para ajudá-los em algumas tarefas que eles terão nas semanas seguintes.

A Multillidae está com um projeto de abrir uma **loja virtual** e um dos setores dessa loja será o setor de livros de tecnologia. A Multillidae comprou alguns livros da Casa do Código para colocar na plataforma online de vendas.

Entretanto, a plataforma da Multillidae só aceita os arquivos no formato .png. Mas, os arquivos que foram passados da Casa do Código estão na extensão .jpg.

A missão que nos foi dada é justamente **encontrar uma forma de converter esses arquivos** de extensão .jpg para .png.

Os diretores da Multillidae nos passaram o [link](https://drive.google.com/open?id=0BzmYQVmw4W7nUW40M2dfQWxlTm8) para o download das imagens.

Muito bem! Após ter feito o download das imagens, vamos abrir o terminal e verificar o diretório, para ver se de fato, o arquivo está lá na pasta "Downloads".

Como foi visto no curso de Linux, (se você ainda não fez o curso, clique [aqui](https://cursos.alura.com.br/course/linux-ubuntu-processos?preRequirementFrom=shellscripting)), para mudar de diretório basta utilizar o comando seguido da pasta cd Downloads/ e depois utilizar o comando ls que **listará** o conteúdo do diretório em que estamos.

Perceba que assim acessamos o arquivo com as imagens em .jpg, mas ele está compactado em **zip**. Vamos descompactá-lo utilizando o comando unzip imagens-livros.zip



Vamos listar o diretório com o comando ls. O resultado será esse:

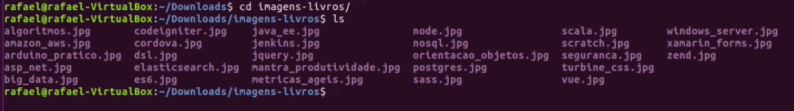
imagens-livros imagens-livros.zip

O primeiro diretório é a pasta que contém as imagens a serem convertidas e o segundo diretório é o arquivo compactado. Podemos removê-lo já que ele não é mais necessário. Utilizando o comando rm imagens-livros.zip conseguimos deixar somente o que nos interessa.

Legal, vamos entrar nesse diretório para ver o conteúdo dele:

$ cd imagens-livros/

$ ls



Temos aqui todos esse livros que precisamos realizar a conversão.

Depois que soubemos de nossa missão dentro da Multillidae, começamos a fazer algumas pesquisas. Vimos que no próprio Ubuntu existe uma ferramenta **capaz** de fazer essa conversão: o **ImageMagick**!!!

Para realizar essa conversão, basta utilizar o comando convert e dizer qual arquivo queremos converter. De início, daremos um foco maior no arquivo algoritmos.jpg, para ter a certeza de que realmente o ImageMagick irá realizar essa conversão. Feito isso, diremos o nome e a extensão do arquivo para o qual iremos converter:

$ convert algoritmos.jpg algoritmos.png

Na sequência, usamos o comando para listar, o ls. Vimos que o arquivo algoritmos.png se encontra nesse mesmo diretório. Mas, será verdade? Vamos confirmar se realmente esse arquivo tem a extensão .png.

![Interface gráfica do usuário, Aplicativo

Descrição gerada automaticamente](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDgRXhpZgAATU0AKgAAAAgABAE7AAIAAAAHAAAISodpAAQAAAABAAAIUpydAAEAAAAOAAAQyuocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAFJhZmFlbAAAAAWQAwACAAAAFAAAEKCQBAACAAAAFAAAELSSkQACAAAAAzI4AACSkgACAAAAAzI4AADqHAAHAAAIDAAACJQAAAAAHOoAAAAIAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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F/25H9Uzjf8AhE/FUw/0vx7dNxg+Rp8UX8qP+FeyTc3vi/xJNnOVS9Ean8AtdlRR7GHX82H9p4pfC0vSMV+SRx6fC3wqWD3tpcX7jo11dyv+m7FbFl4S8PacuLLRLCL1YW6lj+JGa2KKpUqcdooyqY/F1VadWTXq7EVva29opW1gihUnJEaBQT+FS0UVocbbbuwooooEFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABXH6tdQXvxO0K1tJFmn0+K5kukTnyFeNQu70zniuwooA8w8H6Preu+EdDt7lrCHR7a7+1b43dp5PLlZlQqQFX5hycnjtWfrss1ol/4X0q/0y/W71ZZlt1d/tcRaZZHUoFIIBydxI4r1+ine0r/10/yQPVf15/5hRRRSAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACvH69grx+vKzD7Pz/Q97J/t/L9T//Z)

Maravilha! Ao observar verificamos que o **ImageMagick** conseguiu converter esse arquivo! Ele parece ser a solução ideal para nós. Mas, repare que há cerca de 25 livros que precisam sofrer a conversão de extensão e utilizar o comando convert livro.jpg livro.png várias vezes para cada um dos livros não é uma solução muito elegante. Imagine que amanhã, os diretores tenham mais 100 imagens para converter, então, nesse caso, teríamos que colocar 100 vezes o mesmo comando para cada livro. Não seria nada prático, não é mesmo?

Justamente em situações como essas que o **Shell Scripting** consegue ajudar a automatizar essas tarefas.

### SHELL SCRIPTING

Podemos interpretar o **Shell** como uma interface que nós, usuários, acessamos os recursos no Sistema Operacional. Já a palavra **Scripting**, significa roteiro e é uma lista de comandos que serão interpretados pelo Sistema Operacional.

Montaremos um script capaz de realizar essa conversão para nós, de uma forma mais eficiente do que o usuário simplesmente colocar o comando no terminal para cada imagem. Automatizaremos essa tarefa.

Para criar o arquivo, precisamos de um **editor de texto**. Fique a vontade para escolher o editor de seu gosto: [Nano](https://www.nano-editor.org/), [Vi/Vim](http://ex-vi.sourceforge.net/), [gEdit](https://wiki.gnome.org/Apps/Gedit" \t "blank) ou algum outro de sua preferência. Ao longo do curso, usaremos o **Nano** e o **gEdit**.

Vamos voltar a nossa "home" com o comando cd para criar um diretório no qual vamos guardar todos os scripts feitos durante o curso.

$ cd

$ mkdir Scripts

$ cd Scripts/

Após ter mudado para dentro da nova pasta "Scripts", criaremos o primeiro Script para converter a imagem do formato .jpg para .png. Com o comando nano nome\_de\_um\_arquivo.sh criaremos e editaremos esse arquivo utilizando o editor **Nano**. Como estamos trabalhando com Shell Scripting colocaremos a extensão .sh:

$ nano conversao-jpg-png.sh

Com o editor aberto, temos que dizer como esses comandos serão interpretados. Na primeira linha, vamos dizer qual vai ser o interpretador do script. Para isso, diremos por meio do comando:

#!/bin/bash

Após especificar o interpretador dos comandos que serão digitados a seguir, nos resta somente digitá-los para checar se o script funcionará. Para realizar a conversão, utilizamos o comando convert e converteremos o arquivo amazon\_aws.jpg para o formato .png:

#!/bin/bash

covert amazon\_aws.jpg amazon\_aws.png

Repare que o arquivo amazon\_aws.jpg está em um diretório diferente do nosso script. As imagens estão no diretório "imagens-livros", que está dentro de "Downloads". Os scripts, por sua vez, estão no diretório "Scripts". Por essa razão, é necessário colocar o caminho de onde esses arquivos estão, para que possamos ter a referência de onde eles estão localizados.

Tanto o diretório "Scripts" quanto o diretório "Downloads" estão dentro da **home**. Com isso, podemos usar o ~ pois eles estão dentro da home!

#!/bin/bash

convert ~/Downloads/imagens-livros/amazon\_aws.jpg ~/Downloads/imagens-livros/amazon\_aws.png

Queremos salvar a conversão amazon\_aws.png no mesmo diretório dos arquivos .jpg, para que tudo fique no mesmo lugar.

Se tudo deu certo, vamos salvar o nosso script com o comando Ctrl + X para sair e Y de (yes) para salvar as alterações.

Como falamos que o interpretador do script é o **bash**, para rodar esse script, colocamos bash e o nome do script e depois teclamos o "Enter":

bash conversao-jpg-png.sh

Já que estamos no diretório "Scripts", vamos acessar o diretório "Downloads/imagens-livros":

$ bash conversao-jpg-png.sh

$ cd ~/Downloads/imagens-livros.

$ ls

Observe, agora temos o algoritmos.png e temos o amazon\_aws.png, que é o resultado da conversão que nosso script fez. Mas perceba que o script só está fazendo a conversão do arquivo amazon\_aws, ou seja, nós tiramos o comando do terminal e colocamos no script e isso fez com que voltassemos ao início do problema, precisando digitar uma linha de comando para cada imagem a ser convertida.

Vamos ver como melhorar esse script nas próximas aulas!