

CLI DeepDive - Kubectl Plugins

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kubernetes



Plugins are now beta!

FLY

Improvements



UX

Discoverability

“Extending” built-ins



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A close-up, slightly blurred photograph of a person's hands typing on a silver laptop keyboard. The person is wearing a light-colored, possibly white, long-sleeved shirt. The background is out of focus, showing more of the laptop and the person's arms. Overlaid on the center of the image is the text 'How to write your own?' in a large, bold, black sans-serif font.

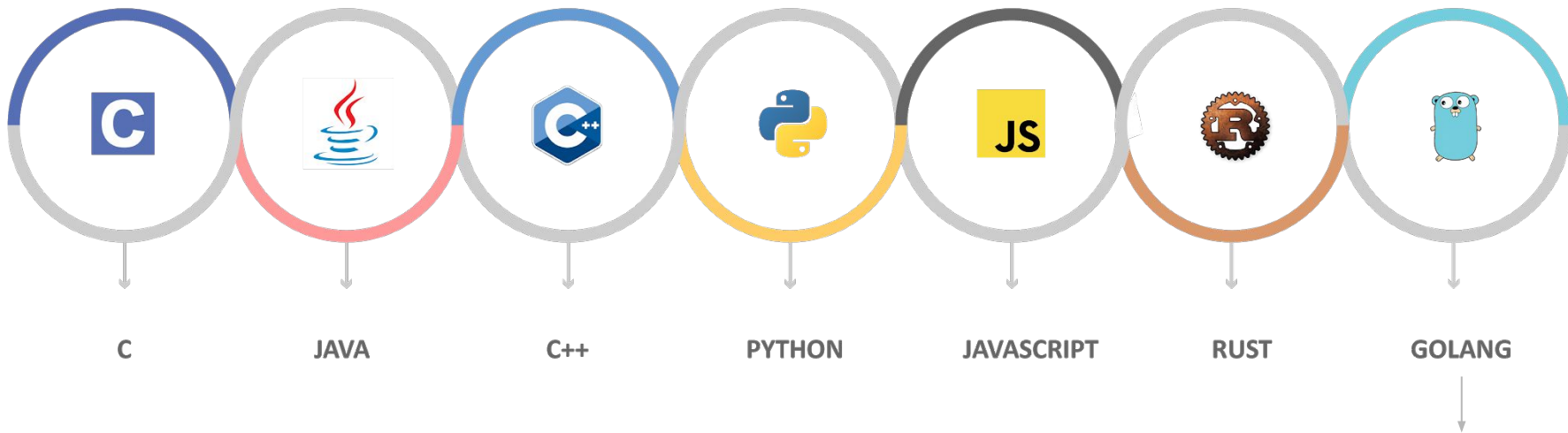
How to write your own?

Any binary



PATH + kubectl-*

Any language



k8s.io/cli-runtime



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CLI Runtime - features



Same core utils that **kubect**l commands use

Reading configuration

Clients to talk to API server

k8s.io/cli-runtime



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CLI Runtime - advantages



Bind flags (printing, config, etc.)

Printing utilities (json, yaml, etc.)

Set of polymorphic helpers

k8s.io/cli-runtime



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Naming structure



[kubernetes/enhancements/keps/sig-cli/
0024-kubectl-plugins.md](#)



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Naming structure



kubectl-foo-bar

kubectl-login

kubectl-my_plugin



kubectl foo bar

kubectl login

kubectl my-plugin



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Name conflicts & path order



```
PATH=/usr/bin/plugins:/usr/bin/moreplugins
```

1. `/bin/plugins/kubect1-foo` 👍
2. ~~`/bin/moreplugins/kubect1-foo`~~



Name conflicts & greedy matching



```
PATH=/usr/bin/plugins:/usr/bin/moreplugins
```

```
$ kubectl foo bar baz
```

1. "**baz**" becomes arg
2. /bin/moreplugins/kubectl-foo-bar 👍
3. ~~/bin/plugins/kubectl-foo~~



Sample plugin



```
func main() {  
    flags := pflag.NewFlagSet("kubectl-ns", pflag.ExitOnError)  
    pflag.CommandLine = flags  
  
    root := cmd.NewCmdNamespace(genericclioptions.IOStreams{In: os.Stdin, Out: os.Stdout, ErrOut: os.Stderr})  
    if err := root.Execute(); err != nil {  
        os.Exit(1)  
    }  
}
```

k8s.io/sample-cli-plugin



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Sample plugin - anatomy



Key Imports

```
"k8s.io/client-go/tools/clientcmd"
```



KUBECONFIG manipulation

```
"k8s.io/client-go/tools/clientcmd/api"
```



KUBECONFIG types

```
"k8s.io/cli-runtime/pkg/genericclioptions"
```



Generic helpers

```
)
```



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Sample plugin - anatomy



Bind Config Flags

```
&NamespaceOptions{  
    configFlags: genericclioptions.NewConfigFlags(),
```

```
o.configFlags.AddFlags(cmd.Flags())
```

```
return cmd
```



Sample plugin - anatomy



Obtain KUBECONFIG data

```
var err error
o.rawConfig, err = o.configFlags.ToRawKubeConfigLoader().RawConfig()
if err != nil {
    return err
}
```



Old plugins?

A rustic wooden sign with a black background and white and brown text. The sign is made of wood and has a rough, weathered appearance. The text is written in a bold, sans-serif font. The word 'CLOSED' is the largest and is colored brown with a white outline. The words 'SORRY WE'RE' are in white. The words 'BUT STILL AWESOME' are in white and are positioned at the bottom of the sign. The sign is hanging from a wooden post with a white string.

**SORRY WE'RE
CLOSED
BUT STILL AWESOME**

A person in a dark hoodie and pants stands in a vast field of tall, green and yellow grass, looking up at a dramatic sky. The sky is a mix of deep blue and soft orange/pink hues, with wispy clouds. The sun is low on the horizon, creating a silhouette effect for the person and the distant trees. The word "Future?" is written in a large, bold, black font on the right side of the image.

Future?