

TaskCat

The process of automating the process of checking and deploying the templates can be done using an opensource tool, i.e., **Taskcat**, a tool for testing CloudFormation templates.

Taskcat is one of the tools which can optimize the run/test of the CF template.

Taskcat deploys the CF template in regions and availability zones and generates a pass/fail grade for the region which helps in testing without actually launching the resources in the cloud and just returning the pass/fail grade.

Taskcat Installation →

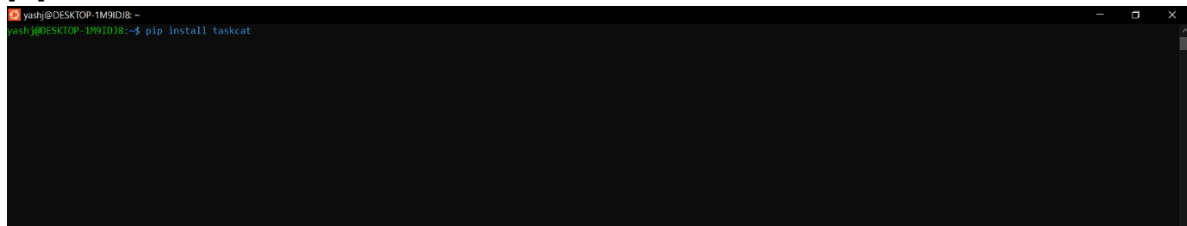
Requirements →

- Linux, as windows is not supported by Taskcat, for windows we can use WSL.
- Docker
- Git
- Python3 – versions below 3.10
- AWS CLI

Installation –

After resolving all the requirements, we run →

pip install taskcat



```
yash@DESKTOP-1M9IDB8:~$ pip install taskcat
Collecting taskcat
  Using cached taskcat-0.9.30.tar.gz (98 kB)
  Installing build dependencies ... done
  Getting requirements to build wheel ... done
  Preparing wheel metadata ... done
Collecting boto3<2.0, >=1.9.21
  Downloading boto3-1.23.8-py3-none-any.whl (132 kB)
  132 kB 1.8 MB/s
Collecting reprint
  Downloading reprint-0.6.0-py2.py3-none-any.whl (6.0 kB)
Collecting dulwich<0.19
  Downloading dulwich-0.20.42-cp38-cp38-manylinux_2_5_x86_64_manylinux1_x86_64_manylinux_2_12_x86_64_manylinux2010_x86_64.whl (553 kB)
  553 kB 12.5 MB/s
Collecting cfn-lint<1.0, >=0.13.0
  Downloading cfn-lint-0.60.1-py3-none-any.whl (8.5 MB)
  8.5 MB 7.4 MB/s
Requirement already satisfied: botocore<2.0, >=1.12.21 in /usr/lib/python3/dist-packages (from taskcat) (1.16.19)
Requirement already satisfied: requests<2.17.0 in /usr/lib/python3/dist-packages (from taskcat) (2.22.0)
Requirement already satisfied: setuptools<=40.4.3 in /usr/lib/python3/dist-packages (from taskcat) (45.2.0)
Requirement already satisfied: pip in /usr/lib/python3/dist-packages (from taskcat) (20.0.2)
Collecting yattag<2.0, >=1.10.0
  Downloading yattag-1.14.0.tar.gz (26 kB)
Collecting docker==4.0
  Downloading docker-4.4.4-py2.py3-none-any.whl (147 kB)
  147 kB 48.9 MB/s
Requirement already satisfied: jsonschema<3.0 in /usr/lib/python3/dist-packages (from taskcat) (3.2.0)
Requirement already satisfied: PyYAML<=5.1 in /usr/lib/python3/dist-packages (from taskcat) (5.3.1)
Requirement already satisfied: Jinja2<3.0, >=2.10.0 in /usr/lib/python3/dist-packages (from taskcat) (2.10.1)
Collecting tabulate<1.0, >=0.8.2
  Downloading tabulate-0.8.9-py3-none-any.whl (25 kB)
Collecting dataclasses<jsonschema<3.0, >=2.0.0
  Downloading dataclasses<jsonschema-2.15.1-py3-none-any.whl (17 kB)
Requirement already satisfied: jmespath<2.0.0, >=0.7.1 in /usr/lib/python3/dist-packages (from boto3<2.0, >=1.9.21->taskcat) (0.9.4)
Collecting s3transfer<0.6.0, >=0.5.0
  Downloading s3transfer-0.5.2-py3-none-any.whl (79 kB)
  79 kB 3.6 MB/s
Requirement already satisfied: six in /usr/lib/python3/dist-packages (from reprint->taskcat) (1.14.0)
Collecting backports.shutil_get_terminal_size-1.0.0-py2.py3-none-any.whl (6.5 kB)
Requirement already satisfied: colorama in /usr/lib/python3/dist-packages (from reprint->taskcat) (0.4.3)
Requirement already satisfied: urllib3<=1.24.1 in /usr/lib/python3/dist-packages (from dulwich=>0.19->taskcat) (1.25.8)
Requirement already satisfied: certifi in /usr/lib/python3/dist-packages (from dulwich=>0.19->taskcat) (2019.11.28)
Collecting networkx<2.8.2-py3-none-any.whl (2.0 MB)
  2.0 MB 48.9 MB/s
Collecting jschema-to-python<=1.2.3
  Downloading jschema-to-python-1.2.3-py3-none-any.whl (10 kB)
Collecting junit-xml<=1.9
  Downloading junit-xml-1.9-py2.py3-none-any.whl (7.1 kB)
```

CF Template to test on -- [EKS](#).

Taskcat requires the project to contain a `.taskcat.yml` file to run the test and link to the CF templates.

`.taskcat.yml` has been provided in the [EKS](#) repository.

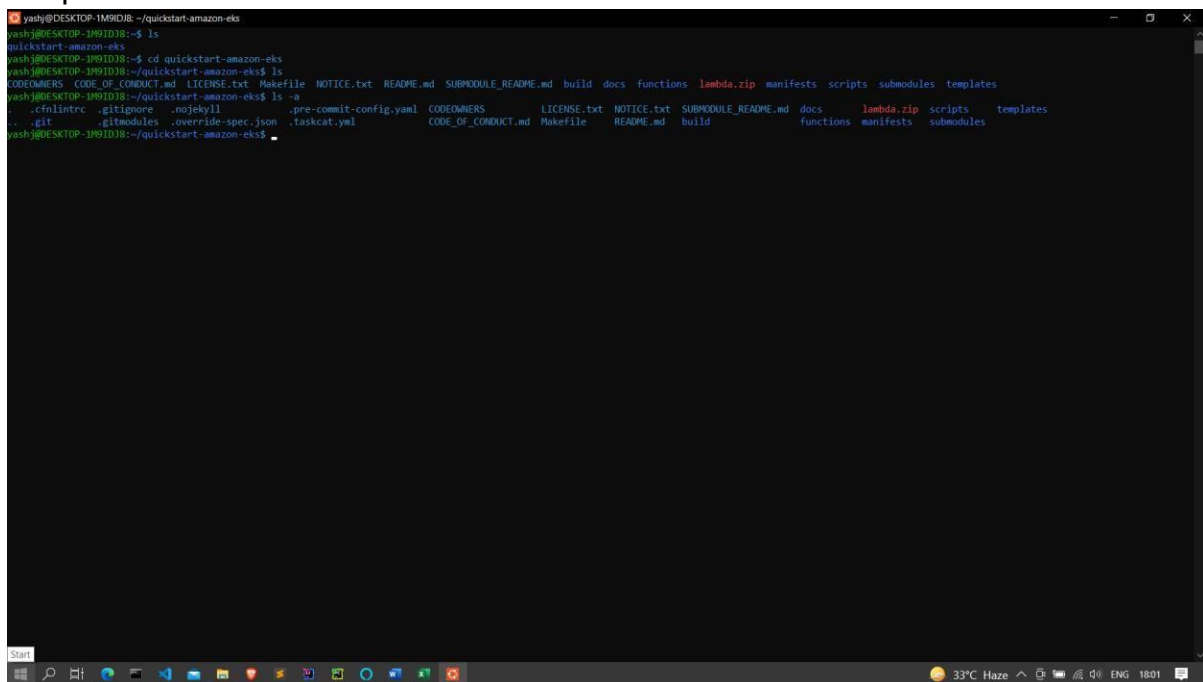
Running taskcat to test the CF templates →

Configure the aws cli & check the credentials →

aws configure

aws sts get-caller-identity

We have to clone the repository and navigate into it and run taskcat to test the templates.



```
yash@DESKTOP-1M9ID78: ~/quickstart-amazon-eks
yash@DESKTOP-1M9ID78:~$ ls
quickstart-amazon-eks
yash@DESKTOP-1M9ID78:~$ cd quickstart-amazon-eks
yash@DESKTOP-1M9ID78:~/quickstart-amazon-eks$ ls
CODEOWNERS  CODE_OF_CONDUCT.md  LICENSE.txt  Makefile  NOTICE.txt  README.md  SUBMODULE_README.md  build  docs  functions  lambda.zip  manifests  scripts  submodules  templates
..          .tflintrc          .gitignore   .nojekyll   .pre-commit-config.yaml  CODEOWNERS  LICENSE.txt  NOTICE.txt  SUBMODULE_README.md  docs  lambda.zip  scripts  templates
.          .git               .gitmodules  .override-spec.json  .taskcat.yml  CODE_OF_CONDUCT.md  Makefile  README.md  build  functions  manifests  submodules
yash@DESKTOP-1M9ID78:~/quickstart-amazon-eks$
```

taskcat test run

```
yash@DESKTOP-1M9DJB: ~/quickstart-amazon-eks
yash@DESKTOP-1M9DJB:~$ ls
quickstart-amazon-eks
yash@DESKTOP-1M9DJB:~$ cd quickstart-amazon-eks
yash@DESKTOP-1M9DJB:~/quickstart-amazon-eks$ taskcat test run

taskcat

version 0.9.30
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-test.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-controlplane.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-per-region-resources.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-metrics-server.template.yaml[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-load-balancer-controller.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-efs.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-per-account-resources.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-cluster-autoscaler.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-prerequisites.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-entrypoint-new-vpc.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-windows-support-workload.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-advanced-configuration.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-functions.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-iam.template.yaml
[INFO] [0] Linting passed for file: /home/yash/quickstart-amazon-eks/templates/amazon-eks-fargate-profile.template.yaml
[WARN] [0] ---
[WARN] [0] Linting detected issues in: /home/yash/quickstart-amazon-eks/templates/aus-node-daemonset-IRSA.template.yaml
[WARN] [0] line 12 [3011] [Check resources with UpdateReplacePolicy/DeletionPolicy have both] Both UpdateReplacePolicy and DeletionPolicy are needed to protect Resources/IRSARole from deletion
[WARN] [0] line 36 [3011] [Check resources with UpdateReplacePolicy/DeletionPolicy have both] Both UpdateReplacePolicy and DeletionPolicy are needed to protect Resources/ServiceAccount from deletion
[WARN] [0] line 49 [3011] [Check resources with UpdateReplacePolicy/DeletionPolicy have both] Both UpdateReplacePolicy and DeletionPolicy are needed to protect Resources/ServiceClusterRoleBinding from deletion
[WARN] [0] line 93 [3011] [Check resources with UpdateReplacePolicy/DeletionPolicy have both] Both UpdateReplacePolicy and DeletionPolicy are needed to protect Resources/JobResource from deletion
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/registerType using docker image taskcat-build-85ccb22a7ea550599d378691dae54377
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/KubeManifest using docker image taskcat-build-40da6f6d351f5a4ab412e4d6c97439
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/KubeGet using docker image taskcat-build-e608b8c3ed65276bda19bd79b295d0
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/GetCallerArn using docker image taskcat-build-6b72c09b5a0b5add97b96c31e35a94ed
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/CleanupSecurityGroupDependencies using docker image taskcat-build-6b72c09b5a0b5add97b96c31e35a94ed
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/GetCallerArn using docker image taskcat-build-a72dc332e0a588db2efee2d0a4a24
```

```
yash@DESKTOP-1M9DJB: ~/quickstart-amazon-eks
[WARN] [0] line 49 [3011] [Check resources with UpdateReplacePolicy/DeletionPolicy have both] Both UpdateReplacePolicy and DeletionPolicy are needed to protect Resources/ServiceClusterRoleBinding from deletion
[WARN] [0] line 93 [3011] [Check resources with UpdateReplacePolicy/DeletionPolicy have both] Both UpdateReplacePolicy and DeletionPolicy are needed to protect Resources/JobResource from deletion
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/registerType using docker image taskcat-build-85ccb22a7ea550599d378691dae54377
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/KubeManifest using docker image taskcat-build-40da6f6d351f5a4ab412e4d6c97439
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/ReleaseResource without building dependencies
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/KubeGet using docker image taskcat-build-e608b8c3ed65276bda19bd79b295d0
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/CleanupSecurityGroupDependencies using docker image taskcat-build-6b72c09b5a0b5add97b96c31e35a94ed
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/GetCallerArn using docker image taskcat-build-6b72c09b5a0b5add97b96c31e35a94ed
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/awscilayer using docker image taskcat-build-5e5a8b23c3c05d0a27417e11c3ba6b3
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/kubectlayer using docker image taskcat-build-d158982220f59fa9421808cabf5540
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/CleanupLoadBalancers using docker image taskcat-build-2084b4375c1958d0b994260b931f1f3a
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/ResourceFinder using docker image taskcat-build-f60ce831bf50f78bd0b080523e335
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/CleanupIamdas using docker image taskcat-build-7d88b33b0a9f3315bce4d204fac400a0
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/crhelperLayer using docker image taskcat-build-e6ed1f049a35fdd93151ad8bd84f4fc
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/boto3layer using docker image taskcat-build-d52545344e3c5841bbb0108a895b4965
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/DeleteBucketContents using docker image taskcat-build-31dae3388e56a5091c4630c9efbce6
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/EKSClusterResource without building dependencies
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/registerCustomResource using docker image taskcat-build-9603034be4a5515a099453c8511e5483
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/kubernetesResources without building dependencies
[INFO] [0] Packaging lambda source from /home/yash/quickstart-amazon-eks/functions/source/FargateProfile using docker image taskcat-build-8fcc194e50a75919b3ac8d8272e2dc02
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/CODEOWNERS
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/lambda.zip
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/LICENSE.txt
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-load-balancer-controller.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-fargate-profile.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-metrics-server.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-controlplane.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-test.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-windows-support-workload.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/example-workload.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-entrypoint-existing-cluster.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-entrypoint-new-vpc.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/scripts/windows-setup.sh
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/scripts/gather_logs.sh
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/docs/generated/services/metadata.adoc
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/Makefile
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/docs/generated/regions/index.adoc
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/NOTICE.txt
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-efs.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-per-account-resources.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-iam.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/templates/amazon-eks-advanced-configuration.template.yaml
[INFO] [0] S3: -> s3://tc-quickstart-amazon-eks-n5356hp8/quickstart-amazon-eks/scripts/test-manifest.yaml
```


Sample working of taskcat on sqs.yml template →

```
yash@DESKTOP-1M91DJB: ~/environment/taskcat-example
yash@DESKTOP-1M91DJB:~/environment/taskcat-example$ taskcat test run

taskcat

version 0.9.30
[INFO] Linting passed for file: /home/yashj/environment/taskcat-example/sqs.yml
[INFO] [S3] -> s3://tcat-taskcat-example-46nn9kk/taskcat-example/sqs.yml
[INFO] stack tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad
[INFO] {
[INFO]   region: us-east-1
[INFO]   status: CREATE_COMPLETE
[INFO] }
[INFO] stack tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad
[INFO] {
[INFO]   region: us-east-2
[INFO]   status: CREATE_COMPLETE
[INFO] }
[INFO] Reporting on arn:aws:cloudformation:us-east-1:810682364099:stack/tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad/bfcc8b80-dc15-11ec-a1cf-127aad095e71
[INFO] Reporting on arn:aws:cloudformation:us-east-2:810682364099:stack/tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad/bfcc8b80-dc15-11ec-bb4b-02216e061150
[INFO] Deleting stack: arn:aws:cloudformation:us-east-2:810682364099:stack/tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad/bfcc8b80-dc15-11ec-bb4b-02216e061150
[INFO] Deleting stack: arn:aws:cloudformation:us-east-1:810682364099:stack/tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad/bfcc8b80-dc15-11ec-a1cf-127aad095e71
[INFO] stack tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad
[INFO] {
[INFO]   region: us-east-1
[INFO]   status: DELETE_COMPLETE
[INFO] }
[INFO] stack tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad
[INFO] {
[INFO]   region: us-east-2
[INFO]   status: DELETE_COMPLETE
[INFO] }
yash@DESKTOP-1M91DJB:~/environment/taskcat-example$
```

Output in lynx cmd browser →

```
yash@DESKTOP-1M91DJB: ~/environment/taskcat-example/taskcat_outputs

GitHub Repo: https://github.com/aws-lambda/taskcat
Documentation: https://taskcat.io
Tested on: Wednesday - May,25,2022 @ 16:02:59

taskcat

Test Name          Tested Region      Stack Name      Tested Results Test Logs
-----
sqs-test
us-east-1 tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad CREATE_COMPLETE View Logs
sqs-test
us-east-2 tCaI-taskcat-example-sqs-test-3aed598e1f59409686f4a8fa150b70ad CREATE_COMPLETE View Logs
Generated by taskcat (self.version)

Commands: Use arrow keys to move, '?' for help, 'q' to quit, '<' to go back.
Arrow keys: Up and Down to move, Right to follow a link, Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /-search [delete]-history list
```