

Supplementary File 1

The runtime program of gcpp v1.9.0

```
#!/bin/bash
```

```
# Set variables
```

```
INPUT_FASTA="your_assembly.fasta"
```

```
INPUT_BAM="your_aligned_reads.bam"
```

```
OUTPUT_PREFIX="polished_assembly"
```

```
NUM_THREADS=32
```

```
GCPP_VERSION="1.9.0"
```

```
# Run GCpp Arrow polishing
```

```
echo "Starting GCpp Arrow polishing with version $GCPP_VERSION"
```

```
# Basic command
```

```
gcpp --config-file config.xml \
```

```
    --log-level INFO \
```

```
    --num-threads $NUM_THREADS
```

```
# Or use the arrow module directly
```

```
arrow \
```

```
    -r $INPUT_FASTA \
```

```
    -o $OUTPUT_PREFIX.fasta \
```

```
    -o-vcf $OUTPUT_PREFIX.vcf \
```

```
    -o-csv $OUTPUT_PREFIX.csv \
```

```
    -j $NUM_THREADS \
```

```
    $INPUT_BAM
```

```
echo "GCpp Arrow polishing completed"
```