Problem 1
System Health Monitoring Script:

```
!/bin/bash
CPU_THRESHOLD=80
MEMORY_THRESHOLD=80
DISK_THRESHOLD=90
PROCESS_THRESHOLD=100
CPU_USAGE=$(top -bn1 | grep | sed | awk )
MEMORY_USAGE=$(free | awk )
DISK_USAGE=$(df -h | awk  | sed )
TOTAL_PROCESSES=$(ps aux | wc -l)
if (( $(echo "$CPU_USAGE > $CPU_THRESHOLD" | bc -l) )); then
    echo "CPU usage is high: $CPU_USAGE%" >> /var/log/system_monitor.log
fi
if (( $(echo "$MEMORY_USAGE > $MEMORY_THRESHOLD" | bc -l) )); then
    echo "Memory usage is high: $MEMORY_USAGE%" >> /var/log/system_monitor.log
fi
if (( $(echo "$DISK_USAGE > $DISK_THRESHOLD" | bc -l) )); then
    echo "Disk usage is high: $DISK_USAGE%" >> /var/log/system_monitor.log
fi
if (( $TOTAL_PROCESSES > $PROCESS_THRESHOLD )); then
    echo "Number of processes exceeded threshold: $TOTAL_PROCESSES" >>
/var/log/system_monitor.log
fi
```

Problem 2 Automated Backup Solution

```
#!/bin/bash
SOURCE_DIR="/path/to/source/directory"
DEST_DIR="/path/to/remote/destination"
REMOTE_USER="username"
REMOTE_HOST="remote_host_or_cloud_storage_address"
SSH_KEY="/path/to/ssh/key"
REMOTE_PORT="22"  # Change port number if necessary
LOG_FILE="/var/log/backup.log"
echo "Starting backup process..."

rsync -avz -e "ssh -i $SSH_KEY -p $REMOTE_PORT" "$SOURCE_DIR"
"$REMOTE_USER@$REMOTE_HOST:$DEST_DIR" >> "$LOG_FILE" 2>&1

if [ $? -eq 0 ]; then
    echo "Backup completed successfully."
    echo "Backup completed successfully." >> "$LOG_FILE"
else
    echo "Backup failed. See $LOG_FILE for details."
fi
```